The NORTH CAROLINA MEDICAL JOURNAL

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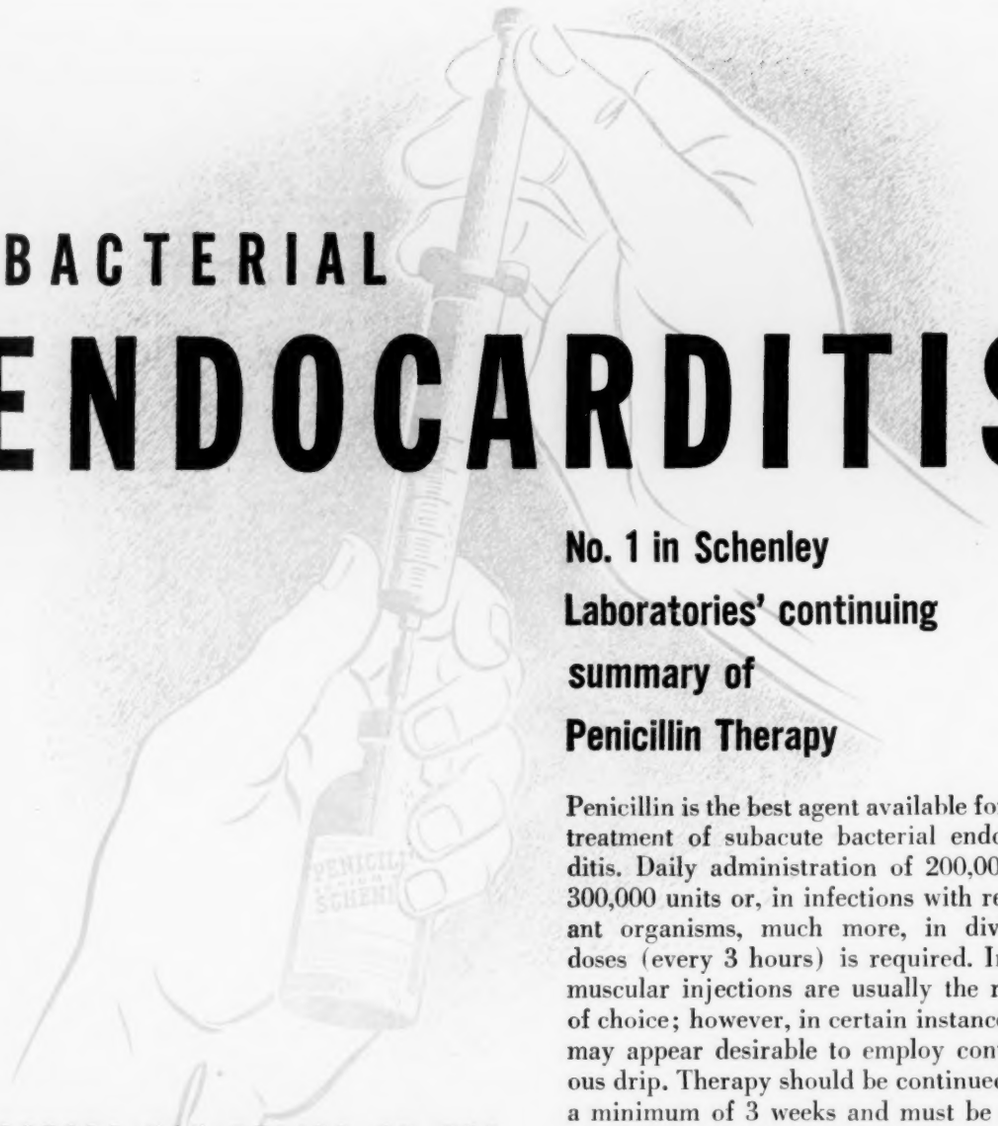

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DAWSON, M. H., AND HUNTER, T. H.: *The Treatment of Subacute Bacterial Endocarditis with Penicillin: Results in Twenty Cases, J.A.M.A. 127:129 (Jan. 20) 1945*. . . FAVOUR, C. B.; JANEWAY, C. A.; GIBSON, J. G., II, AND LEVINE, S. A.: *Progress in the Treatment of Subacute Bacterial Endocarditis, New England J. Med. 234:71 (Jan. 17) 1946.*

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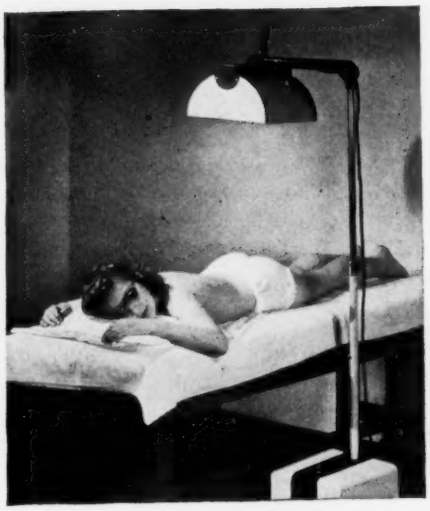

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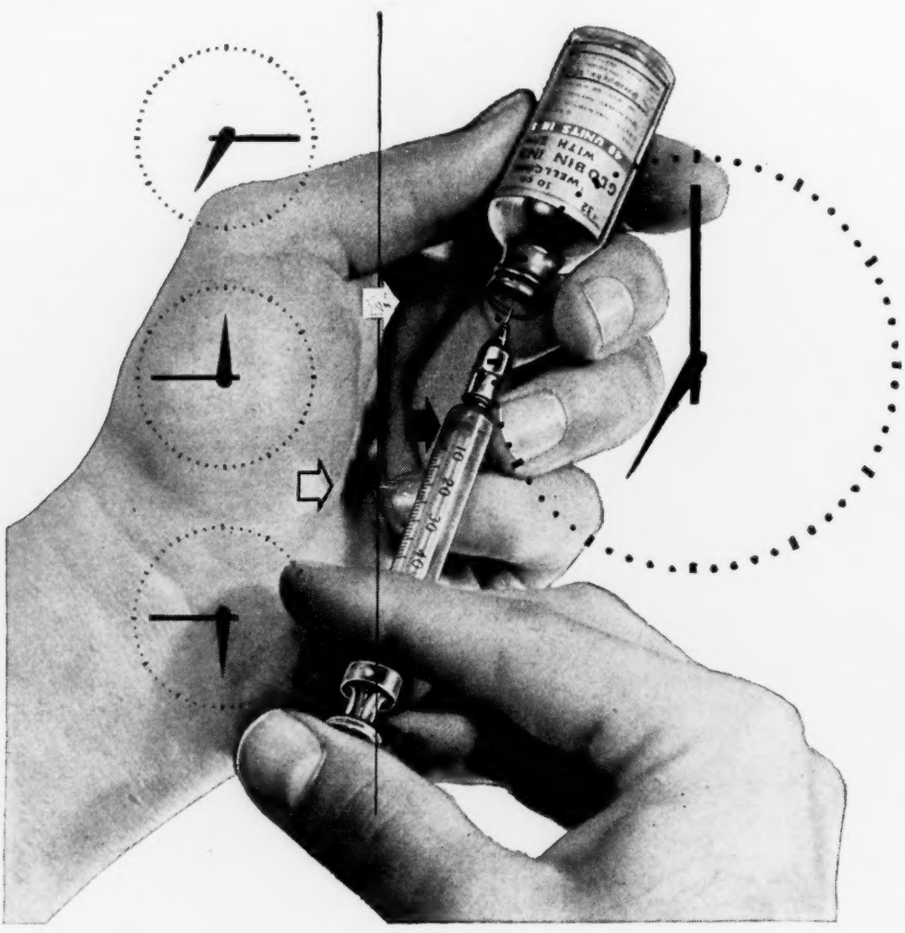

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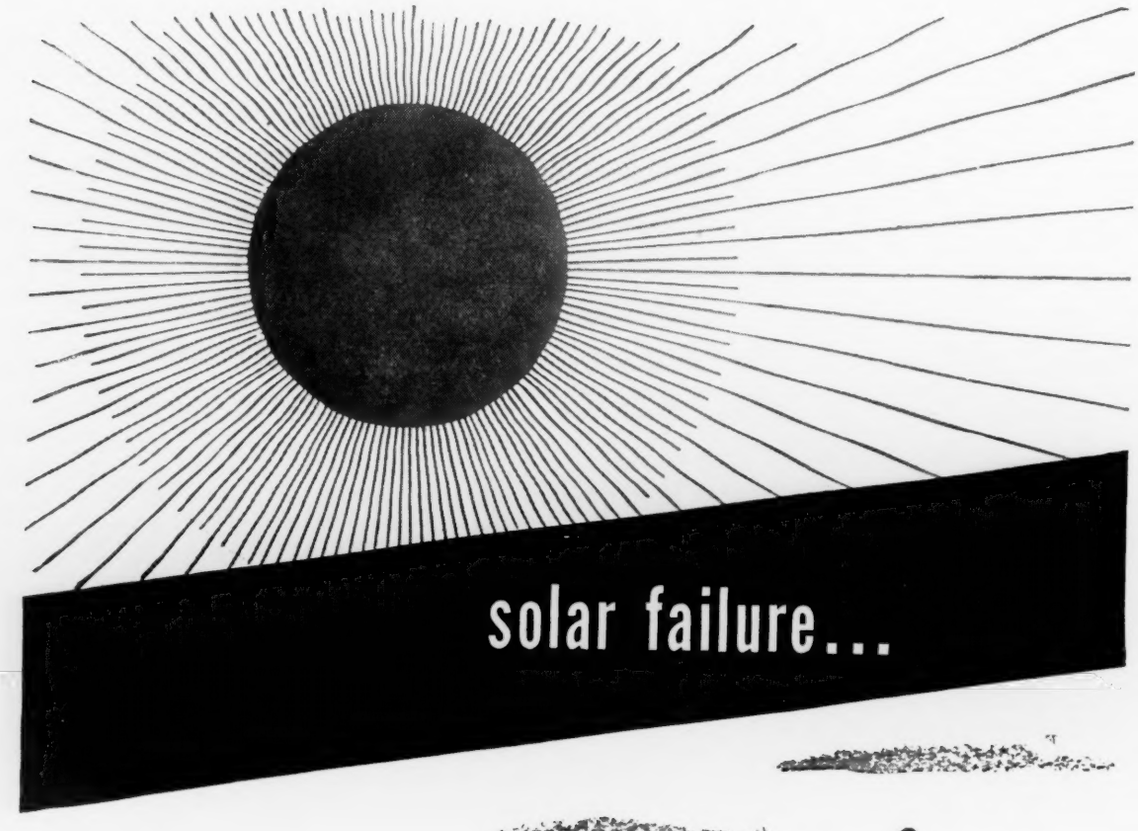

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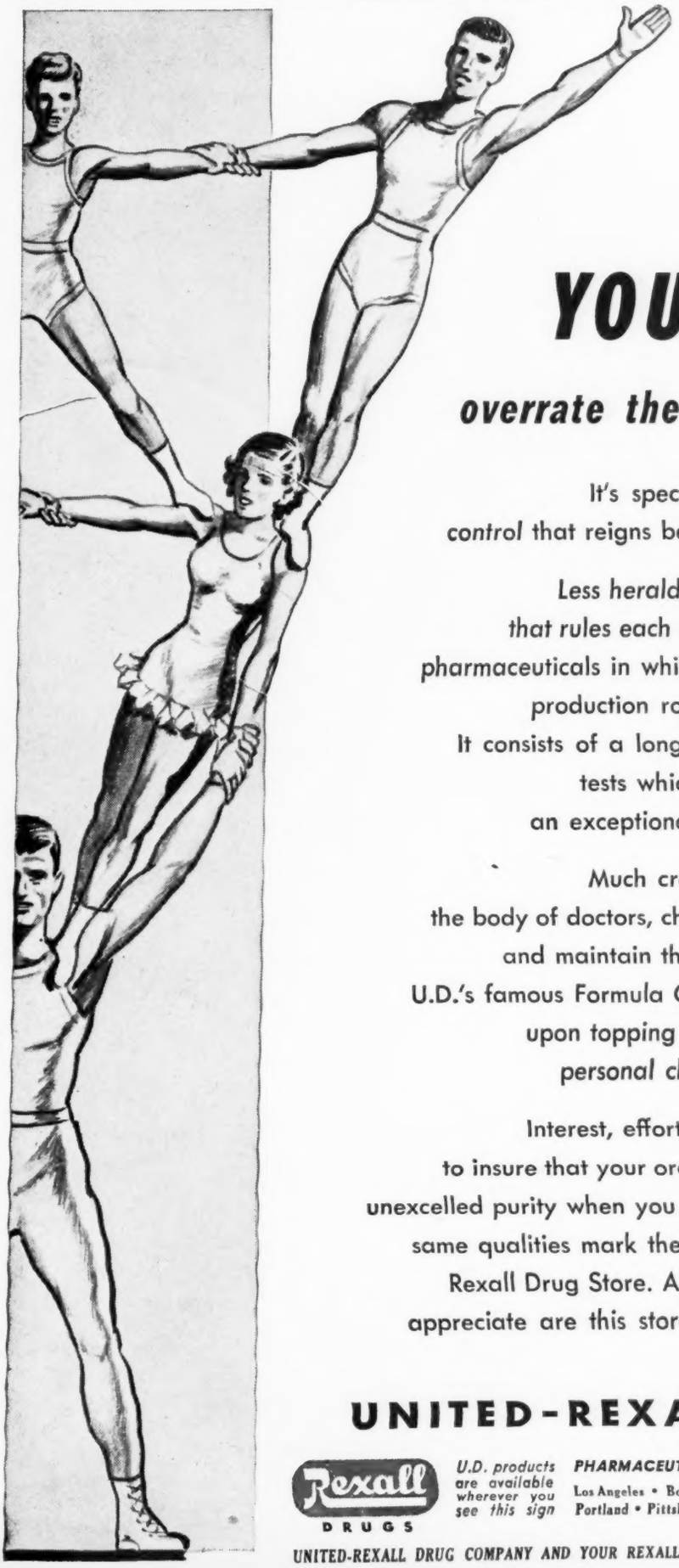

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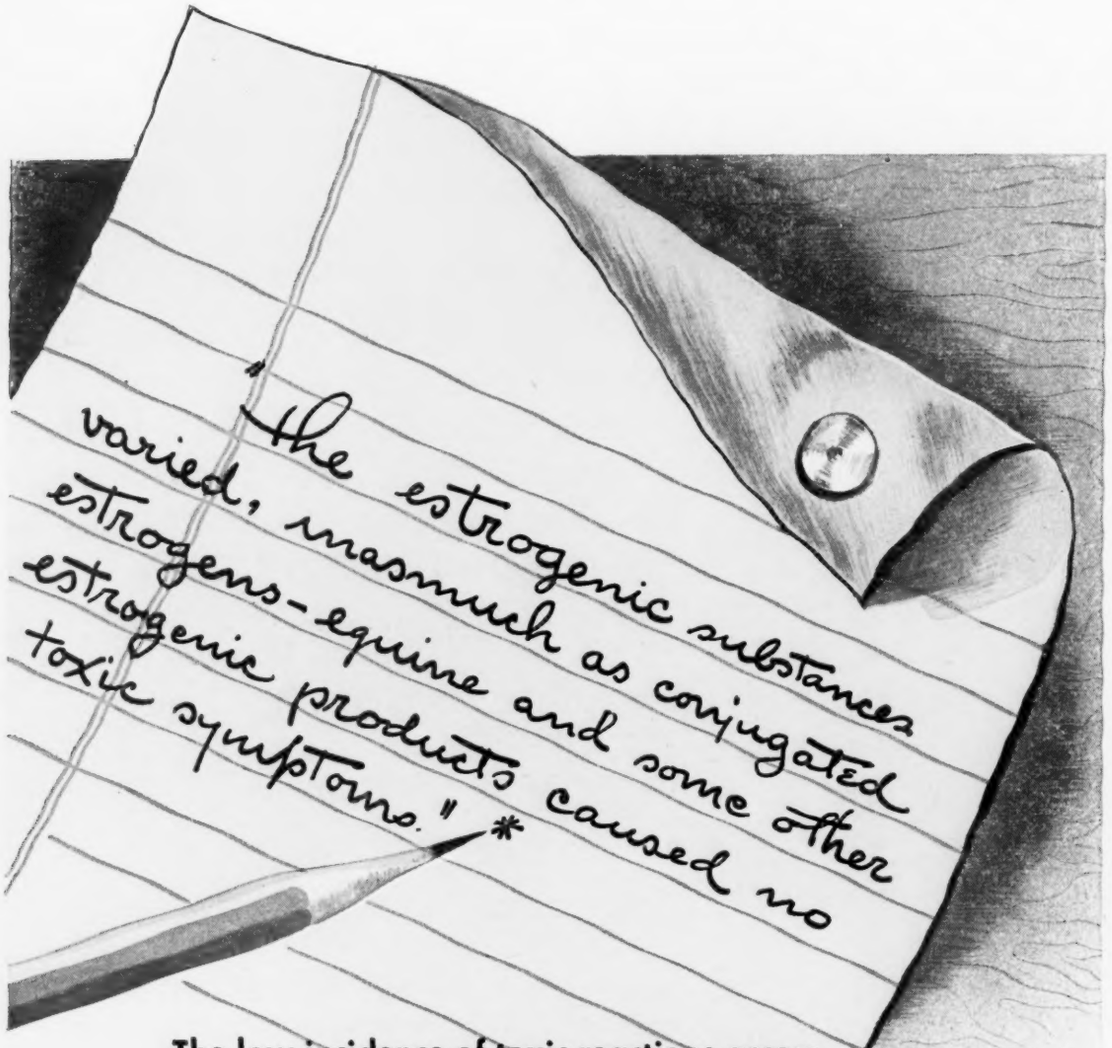
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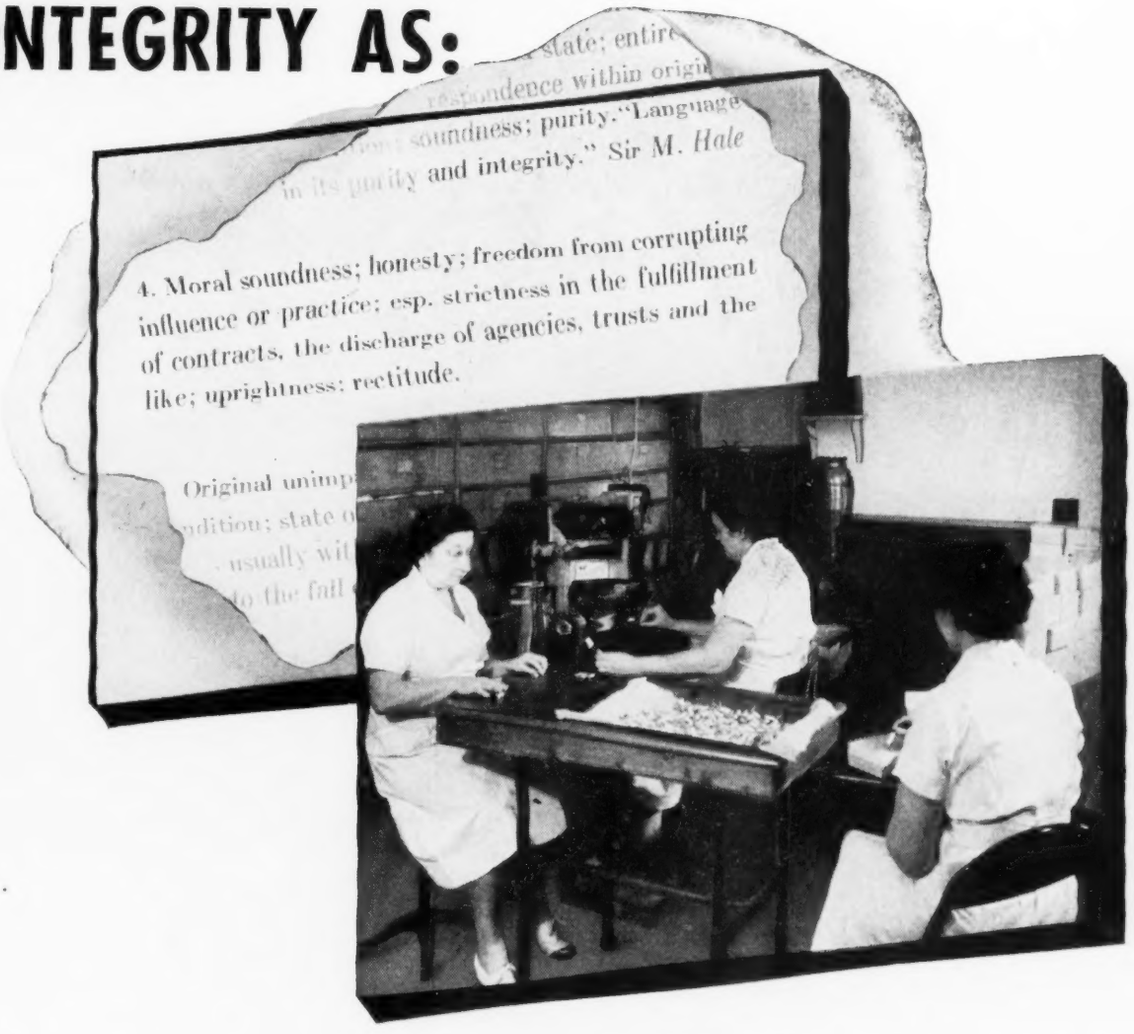
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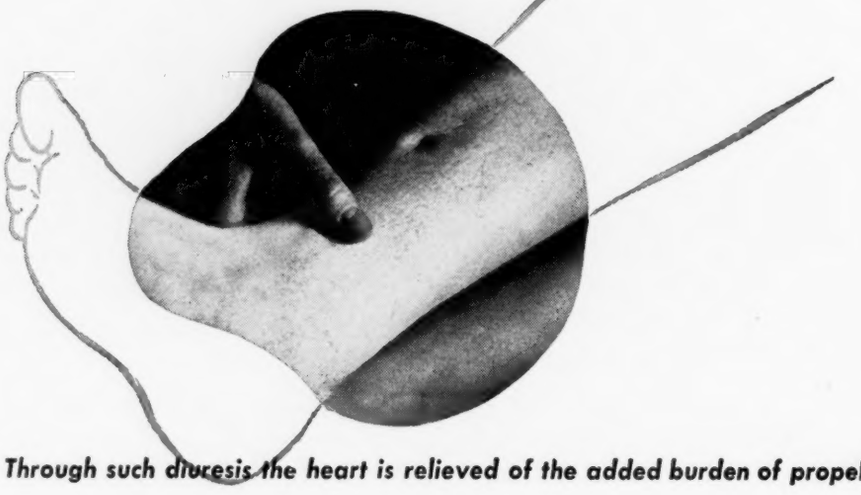

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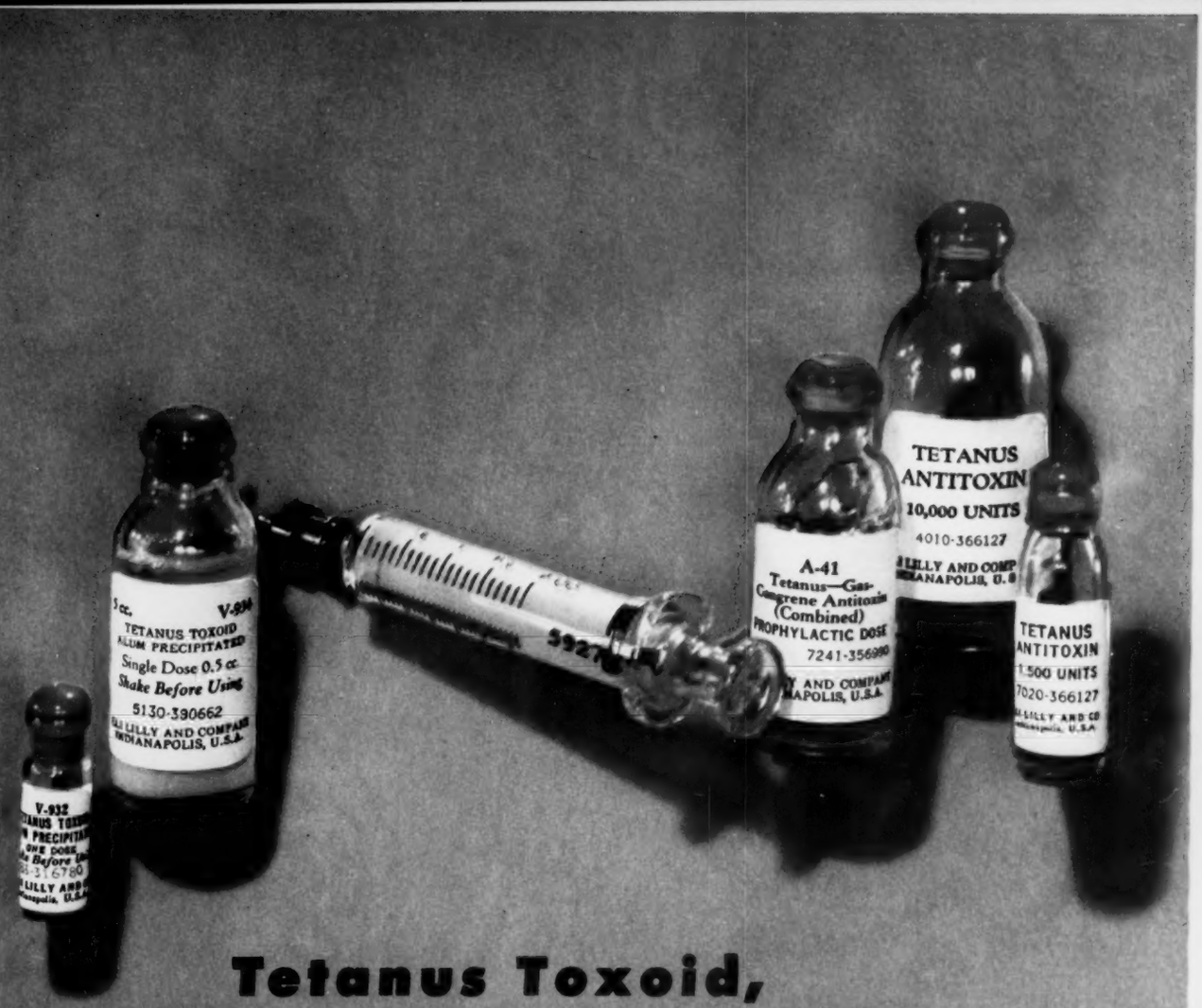

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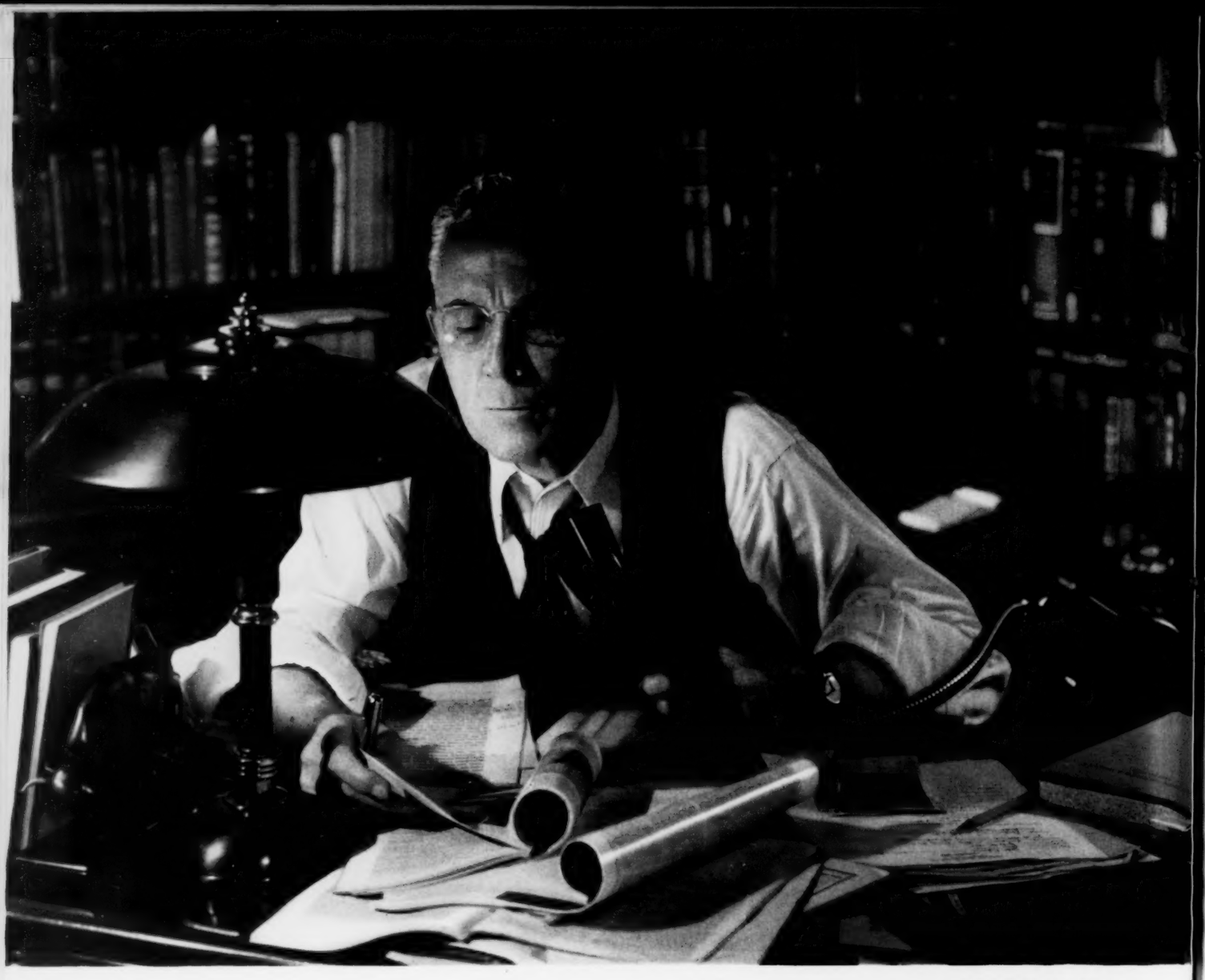

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MEDICINE IN THE POSTWAR WORLD

MORRIS FISHBEIN, M.D.

Editor of the
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CHICAGO, ILLINOIS

We have just passed through one of the greatest and most devastating wars that has ever affected mankind. Hundreds of thousands of our finest young men have lost their lives; many hundreds of thousands have been wounded, and for years to come will bear the marks of their sacrifice. Among those who volunteered and who gave of their lives for long periods of time were 60,000 of the finest physicians the United States can boast. These 60,000 men left the practices which they had built, left their families, left their equipment, gave up their offices, gave up all those accessories that are necessary to practice medicine as we practice it here in the United States, and went forth to do their utmost to save our democracy. The doctors who served in the army and navy, and the medical corpsmen who served with them received more distinctions for courage in action and for bravery than any other branch of service in proportion to the numbers engaged.

I have just received a telegram from Surgeon General Kirk stating that 32,100 of the army medical officers have now been returned to civilian life; a similar telegram from Admiral McIntire states that 6,272 of the medical officers enrolled in the United States Naval Reserve have also been returned to civilian life. According to these figures, about 40,000 of the 60,000 physicians who entered the military services have now returned to civil life and are trying to redistribute themselves over the country, that they may continue to render the high quality of service that has been the distinguishing mark of medicine in the United States.

It would be folly to expect that these men would almost immediately find themselves back in the situations that they left. Twenty thousand young men who entered our armed forces had what was called an "accelerated" medical education and an accelerated internship, and some of them had an accelerated residency. I am amused by the fact that we called the program an accelerated curriculum and the British called it a "contracted" curriculum. The result was the same, but the difference in terms indicates the different characters of the two peoples. When the Americans have a job to do they put on full speed ahead and get it done; when a Britisher has a job to do he tightens his belt, sits down, and says "Move me." The two countries worked together, however, and both schemes were satisfactory. Now we look forward to the attempt to re-establish the kind of medical practice that we had in the past. We should realize, however, that the whole character of medical practice in the United States has been changed by the tremendous discoveries that came out of the war. Among these were medical discoveries which in their significance approach everything that has been expected of the atomic bomb.

Achievements of American Medicine in the War

The atomic bomb has been widely heralded as the greatest discovery of the war. An atomic bomb can destroy fifty thousand or a hundred thousand lives in a single instant. But the medical discoveries made in this

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war are likely to save not hundreds of thousands, but hundreds of millions of lives which formerly would have been lost.

Among the greatest of these discoveries are the antibiotic preparations: penicillin, streptomycin, clavacin, patulin, subtilin, the sulfonamide drugs, and many other antibiotic drugs now the subject of experimentation. By our methods of mass production, by the ingenuity of the American people, our nation was able to develop such a vast supply of antibiotic drugs that today all the world looks to the United States for these life-saving remedies.

John Langdon-Davies, in an article just written and circulated by the British Bureau of Information, says that without these great medical discoveries the war might well have been lost by the nations which were fighting for democracy. He points out that, even though penicillin was a British discovery, it was the mass production of the great American pharmaceutical industries which made possible the usefulness of this product in the closing years of the war.

In World War I 70 per cent of the men wounded in the chest died of their wounds; in this war 20 per cent of the men wounded in the chest died of their wounds. In World War I 9 per cent of men wounded in any manner at all died of their wounds; in this war the mortality from wounds was something under 3 per cent. These results were not entirely due to the antibiotic remedies; credit must also be given to the great discoveries in the use of whole blood, blood plasma, and all the other by-products of blood—discoveries which are also among the greatest to come out of the war.

Surgeon General Kirk in a recent address said that more important than the antibiotic drugs and more important than the blood derivatives was the fact that the American surgeon had been so well trained in institutions which represent the highest standards of medical education available anywhere in the world. He gave credit for a vast saving of life to the excellent training of the American physician and to the fact that the number of doctors who volunteered was great enough to make available to wounded men almost immediately the best quality of medical care.

You will probably hear from General James S. Simmons of the work that was done in controlling tropical diseases in the army. The control of the tropical diseases and of the deadly plagues which in previous centuries have devastated, at times even decimated, the entire world has been accomplished by discoveries that have been contributed free to the people of the world.

I mention these great achievements of American medicine in the war because they are likely to affect greatly the quality and distribution of medical practice in the postwar years. I mention them also so that those who would depreciate American medicine, those who would destroy the American system of medical education, those who would take away from the American people their volunteer hospitals, which today minister to 80 per cent of our citizens, may know the accomplishments of the system which they are trying to destroy.

Medical Education in the Postwar World

The whole world must look, for the next twenty-five years at least, to the United States as the center of medical education. Already men from the South American countries and from many of the European countries are looking forward to the opportunity of coming to our shores in order that they may learn at first hand some of the magnificent advances that we have made in medicine.

We have had in our time a medical education that was not the best in the world. In 1905 the United States had 166 medical colleges, many of which were of the lowest possible order; today it has 70 class A medical colleges, institutions of the highest possible quality. We are adding rapidly to the number of our medical educational institutions. New schools are being opened or contemplated in Birmingham, Seattle, and Salt Lake City. All over the site of this assembly we see the sign "Why Charlotte?" When we consider the possibilities that are developing here in North Carolina, with its three distinguished medical schools, we see again that the American people, and particularly the people in this state, appreciate what a high quality of medical education means in the saving of lives, the prevention of disease, and the relief of pain.

I have been particularly struck by the type of cooperation through which these North Carolina institutions are being developed. Here we see the great industries of the state, the government of the state, the public officials of the state, the medical profession of the state, the public health author-

ities of the state, apparently all trying to work together to raise the level of medical practice in North Carolina and to get the widest possible distribution of the best possible medical care to all the people of the state. That kind of activity carried on by people who have pride in their own community, who are self-reliant, and who realize the responsibility for lifting themselves to the heights, furnishes an example which we would like to see followed throughout the United States. North Carolina is not a state coming with hat in hand to get its portion of a hand-out of taxes from people all over the country; it is rather a state making every possible effort, with such aid as may be expected from the federal government in the areas of need, to provide a high quality of medical care to all of its people.

Medical Research in the Postwar World

As we again look over the picture of medicine in the postwar world, we realize that good medical education must be to a large extent dependent on research. Research represents the curiosity of the physician and of the scientist coming to the fore. Research is a stimulus to the pupils and teachers in medical institutions and to the practicing physicians who may be associated with such institutions. We in the United States have always recognized that problems of research are not problems of government, not necessarily problems of industry; problems of research are the problems of scholars, and only under the guidance of scholars can research be carried forward as it should be. We look forward to the aid that the federal government can render in carrying on the coordinated and intensified research that was provided during the war under the Office of Scientific Research and Development, the Division of Medical Sciences, the Committee on Medical Research, and other governmental agencies, all striving together to advance medicine as far as possible. The medical profession has welcomed the effort that has been made, following the leadership of Vannevar Bush, to provide in the Kilgore-Magnuson bill the kind of aid that the government can render in stimulating education and research in the institutions that are privately developed and under our own control in our own states throughout this country.

Care of the Sick in the Postwar World

In the postwar period here in the United States we are going to see the sick cared for as they have never been cared for before in this or any other country. The American public has been educated perhaps more than at any previous time in its history to realize what scientific medicine really means for the advancement of the people. All of us must deprecate the strange and deplorable propaganda that has been utilized by federal government officials to change entirely the medical program in the United States through a variety of legislative measures, particularly the bill developed by Senator Wagner, Senator Murray, and Congressman Dingell. There have been other and more commendable health efforts carried on by the government, however — for example, the hospital building program that has been carried on for some years in the past under the Federal Hospitalization Conference and is likely to be carried on in the future under the Hill-Burton Bill, which has now passed the Senate and will likely pass the House.

In hospitals

The vast majority of the sick persons in the United States, outside of those cared for in government institutions for the insane and tuberculous, receive their medical care in volunteer, non-profit hospitals. These hospitals grow out of the hearts of the community. It would be folly to anticipate that our federal government could take over the hospitals, as the British government is now proposing to do, and conduct them under federal government bureaus. I am sure that when the American people have that question broached to them at any time in the future the vast majority of them, even those represented by the A.F. of L. and the C.I.O., will never consent to see their hospitals, which they have built out of their own hearts' blood, conducted as impersonal, wholly objective, government-controlled bureaucracies. I am quite sure that when the nature of this proposal is fully explained to the American people they will resent it and oppose it, whether or not it is ultimately opposed in Great Britain.

We are going to see a great number of new hospitals in the United States. Medicine has advanced so tremendously in the past fifty years that it requires institutions with the maximum of modern scientific equipment

to render the high quality of medical care that the American people are going to demand. Modern institutions will make available all that x-ray can do, will provide the finest quality of physical therapy, will lead to the application of all the new discoveries of psychosomatic medicine, and will make available all of the new discoveries for rehabilitation of the disabled, and occupational therapy to restore them to useful lives in the community. Only a well trained medical profession can provide these services that are going to be demanded by the people.

There is much more to medicine than the glassware and the electricity and the gadgets and contrivances we have come to associate with the advancement of modern medicine. Still we are educating men in our medical institutions to think that in order to practice medicine they must have all this equipment available. Many a young man just released from the army or navy, where almost everything that he thought was necessary to practice medicine was available to him, is unwilling to go into a rural area where he will not have access to a hospital. Our problem at present is to provide a better distribution of medical care, and in some way to make attractive to these young men the districts remote from the great centers.

The Hill-Burton Bill, Senate Bill 191, provides that an adequate survey be made of the health needs of every state. After this survey is completed, the diagnostic institutes, health centers, and hospitals will be located so that every patient and every practitioner can without too great difficulty avail themselves of all that modern medicine affords. These provisions mean good, sound planning, the kind of planning one expects from intelligent men.

By practitioners

I think that the people who lived in North Carolina in 1799—when I understand the North Carolina Medical Society was first formed—were after all not so unfortunate as we sometimes believe. True, they didn't have many of the great advantages that we now think we have. They didn't have to listen to the story of Lora Lawton's Last Liberty and find out that it was presented to them by Duz; they didn't go to the movies to discover exactly what our Western actors were doing in the way of repeating the lives of the great Western bandits of the past; they didn't read the newspapers to find out where Dick Tracy was working, or Orphan Annie, or Superman. They had other little amusements of which I have heard. I think there was a strange custom called "bundling" that was the practice back there. They didn't live wholly unhumorous or unenjoyable lives, and I suppose they didn't worry as much about calories as the ladies do nowadays.

Nowadays we are much concerned with the new mechanical advantages that seem to mean so much in medicine. I like to think of the old man Dr. Herman Kretschmer had on the table in Chicago. He was undergoing a cystoscopy, which is not too enjoyable under the best of circumstances, but the old man was rather enjoying it. Finally Herman Kretschmer said to him, "What do you find so comical?" He replied, "Doc, I'm an old man; I've been piped for water and gas, but this is the first time I was ever wired for electricity."

John Peters and Allan Butler told Congress that modern medicine is so scientific that the doctor doesn't even have to see the patient any more: You wire in the heart action to the electrocardiograph and use television to get the picture over. You can send the heartbeats over the wire, and by amplification get them a thousand times louder two hundred miles away. You can put a stethoscope over the abdomen and hear the gurgles eight hundred miles away—if you enjoy that kind of music. They say that the day of the family doctor with his little black bag is gone; that this thing we call the personal relationship between doctor and patient is just a figment of the imagination. But, of course, they are full-time, salaried teachers; they practice their few hours in their institutions and go home and think up new arguments for passing socialized medicine.

The situation reminds me of the story of Aesop. That old fellow knew a great deal about human beings. Remember the fox that lost its tail? It went around trying to persuade all the other foxes that the only good fox was a fox without a tail. Those doctors have lost all the things that mean so much to physicians throughout the nation, and they will never be satisfied until they make every other doctor just the kind of doctor they are. What we have to do is make the legislators in Washington, who sometimes get sick themselves, see that there is much

more to medicine than this mechanical medicine that has been described to them as modern, scientific medicine. The most modern scientific medicine is that which is again teaching the doctor that his patient is not just a collection of organs which can be measured and tested by the roentgenologist and the clinicopathologist and electrocardiographist, but that his patient is a combination of mind and body—and let us add also, as Harrison Shoulders would say, the soul. I do not anticipate that the physician of the future will be a mechanized physician. I expect the physician of the future to be a far better physician than the one we are educating today. I expect him to be a physician who will not depend wholly upon glassware and electricity for making his diagnoses. I expect him to be a physician like Dr. Herrick of Chicago, who still takes two hours to get a history on a patient who finds it suddenly impossible to keep anything at all on his stomach.

Medicine is no longer practiced by the old-time general practitioner who called on the patient, collected his dollar, and departed. Neither should it be practiced by the specialist to whom the patient goes directly and who never knows the patient until the day —as one man testified in Washington—that the patient comes around to pay the bill. Far too often the specialist practices a type of impersonal medicine which is in itself destructive of the very thing we are trying to save. I think we must teach all our specialists in medical practice—and today they are growing in considerable numbers — that they, too, have a duty in the field of public relations. They are the elite, they are the elect, they are the aristocrats of medical practice. But far too many of them have decided to place themselves apart from the medical profession as a whole. They fail to attend the meetings of the county society and the meetings of the state medical society. They feel that they need not associate themselves in the common battle of American medicine for the things we hold most dear. We must make our specialists realize that they owe a duty to medicine as a whole. They too must practice the kind of public relations that all physicians must practice to make the public know what good medical care really means.

National Health Program of the American Medical Association

The American Medical Association, recognizing the need for progress and recognizing that we must go forward or be destroyed, has set up a National Health Program with ten points, which we have printed again and again in the *Journal of the American Medical Association*. We have printed it *in toto* and one plank at a time. I do hope that every physician will familiarize himself thoroughly with the National Health Program of the American Medical Association. It did not, like the Phoenix, spring from the flames of the current conflagration. It came from many years of study and planning by the leaders of American medicine. We believe that every human being in the United States ought to have adequate clothing, food, fuel, and shelter. He ought to have adequate wages so that he can bear a portion of his responsibility for himself. We believe that a national allocation of funds, when it is necessary to prevent those in the poorer states from living in destitution, is well within the province of a democratic government.

We believe in the widest possible distribution of preventive medicine. We believe in the extension of the maternal and infant care program wherever the need can be shown anywhere in the United States. I have studied the infant mortality statistics of all the states. I know that certain Southern states have infant mortality rates which are shameful in comparison to those of some of the Midwestern and Northern states. I know that the blame does not rest entirely upon the medical profession. It is a blame which rests upon all of the community—a blame associated with a lack of suitable institutions, as well as with the lack of organization of the medical profession for delivery of service. When any state has, as North Carolina has, leaders in its medical profession who are studying the problem of maternal mortality and infant mortality and trying to control it at the source, that is the scientific method working at its best to solve the problem.

We believe that every veteran who served in this war and who suffers with a service-connected injury or disability should never have to lack for medical care. But we believe the best medical care is usually that

rendered to him in his own home town, by his own physician, in his own hospital. All over the United States today medical societies are planning, as you are here in North Carolina, to make the adjustments in medical practice necessary to provide that kind of care for the veteran. When an indigent veteran or members of his family suffer with illnesses or disabilities not definitely connected with military service, we still owe him a debt for having served our democracy. Here, too, the medical profession is always ready, as it has been in the past, to render medical service without question of fee. Let the veterans know that the medical profession has the greatest sympathy for them and the desire to be of every possible help to them.

We believe, too, that it should be possible for the American people voluntarily to insure themselves in such numbers against the cost of sickness and the cost of hospitalization that the care of the indigent will not be too great a problem to the nation as a whole. We have shown by voluntarily insuring ourselves against other hazards of life that we can do it in the American way. We should be given an opportunity to insure ourselves voluntarily against the costs of sickness, before anyone attempts a complete regimentation or nationalization of the American people.

When a man has a pimple on his forehead, you don't cut off his head at the neck to get rid of the pimple; you apply treatment to the pimple. You certainly should not be compelled to give two ounces of castor oil to five thousand people indiscriminately to cure one constipated Congressman. The only answer which the advocates of socialized medicine see to the problem of distributing medical care is to attack the nation as a whole and make every person in the United States fit himself into their regimented scheme, denying the factors of self-reliance, personal responsibility, and ambition which have led the American people to the high place they occupy today.

Let them not tell us, as Mrs. Roosevelt tried to tell us some time ago and as Senator Murray reminds each witness who appears before his committee, that the postal system is socialized, so why not socialize medicine? After all, the mail man doesn't have to make a diagnosis on the letter before he brings it to you. Occasionally he tries; I have seen him shake the parcel post to see if it would leak, but it does not always do so.

Let us not compare these things that represent one type of service with the kind of service rendered by a professional physician who has given years of his life to a fundamental education, a high school education, a university education, a medical education, an internship, a residency, and innumerable periods of postgraduate study. We ought to have health education in our public schools, and it should be given the same credit that is given to the other basic studies.

Senator Murray said yesterday, "After all, doctor, you got to admit that when we put the heat on you, you began to move." He didn't say it in just those words; he said, "You fellows got so scared you began doing something." I said: "The nature of medicine in the United States is shown by its evolution from a medicine that was of an inferior grade in 1905 to a medicine that stands at the very peak of world medicine in 1945; it has shown that the spirit is there, that the desire is there to progress. We have reached a peak from which we may look down and say to all of the people that they may have confidence in American medicine, that we will give to them of our very best and we will give it so widely and so well that no one in the country need fear in the future pain, suffering, disease or death."

535 North Dearborn Street

Studies by Army Take "Q" Fever Out of Medical Curiosity Class

"Q" fever, a pneumonia-like disease first described from Australia, apparently is endemic around the Mediterranean area. Scattered outbreaks have been reported among American troops in Italy, Greece and Corsica. Study of these outbreaks by medical officers on the spot at an Army General Medical Laboratory, and by the Commission on Acute Respiratory Diseases of the Surgeon General's Office have thrown considerable light on this supposedly rare illness and established that it is (essentially) identical with the so-called Balkan Grippe which was epidemic in Greece in 1942.

The responsible agent has been identified as a very minute, rod-shaped organism belonging to the family of ricksettiae, similar to the organism which causes typhus fever. It has been impossible to establish the means of transmission, except that evidence suggests that the "germ" apparently is inhaled in infected dust.

In laboratory outbreaks the disease appears to be extremely infectious. Accidental infections have occurred in almost every laboratory where experimental work with this ricksettia has been conducted. It is likely to be confused with atypical pneumonia, of which the causative agent has not been identified. The syndromes of the two are somewhat similar.

A significant finding was that "fever ricksettia becomes much more virulent with successive passages through the blood of experimental animals."

FUTURE IMPLICATIONS OF THE ARMY'S WARTIME EXPERIENCE WITH TROPICAL DISEASES

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I appreciate the honor of being invited to take part in this ninety-second annual meeting of your distinguished society. It is always a pleasure to come back to our grand old state, and I am delighted to be with you today.

At the suggestion of your president, I wish to discuss briefly the army's experience with tropical diseases during World War II, and to indicate some of the implications of this experience for the future of American medicine.

Few of us realize the magnitude of the health programs developed and executed so successfully during the recent war by the medical departments of the armed forces. We are still too close to this unique medical experience to see it in proper perspective or to visualize its full implications. Even now, however, it is obvious that the war has profoundly influenced medical thought. It has given us a deeper appreciation of preventive medicine and public health; it has re-emphasized the need for continuing basic research in order to meet the still unsolved problems of medicine; and it has created a new concept of the future importance of tropical medicine to world health.

It is with this new concept that we are now concerned. I believe we can best visualize its importance (1) by redefining the terms "tropical medicine" and "tropical diseases," (2) by keeping in mind the fact that such diseases have long been a threat to the health of Americans both at home and abroad, and (3) by reviewing briefly some of the experiences of the armed forces in protecting the health of our soldiers and sailors during the war.

The term "tropical medicine" simply refers to the practice of preventive and curative medicine in tropical regions. The term "tropical diseases," however, is a broader one. It may be applied to any of the diseases of man as they occur in the tropics, and it includes many infections that also exist in other parts of the world.

Certain infections such as African trypanosomiasis have been confined to specific tropical areas because the conditions required for their spread—in this case, the tsetse fly—do not exist elsewhere. Other diseases such as malaria, dengue, and yellow fever are most common in the hot, moist tropical regions because such climates favor the year-round development of their insect vectors, but they are by no means limited to these regions. In fact, they have frequently established themselves in sub-tropical and temperate climates, where their vectors exist and where conditions during the warm seasons favor their propagation. Malaria, for example, was formerly wide-spread throughout most of the Eastern United States, and even today it attacks hundreds of thousands of Americans each year in our Southern states. The tropical diseases also include a wide variety of parasitic and bacterial infections that spread from man to man through the ingestion of food or drink contaminated with feces or other wastes from infected persons. Such filth diseases as cholera, the typhoids, and the dysenteries are most prevalent in the tropics—partly because the climate favors survival of their causative organisms, but mainly because these diseases are always present among impoverished, backward, primitive peoples. However, filth diseases are not confined to the tropics. Throughout the ages they have preyed on man in every region from the Equator to the Poles. Climate also plays a role in the production of the numerous tropical skin infections, but even in these diseases, as in yaws and leprosy, the close contact between filthy, ignorant peoples is undoubtedly an important factor. Tropical nutritional diseases are largely the result of poverty and medical ignorance.

Thus, it is obvious that when we speak of tropical diseases we refer to most of the ills released from Pandora's box, including some diseases that are really native to tropical climates, but including also many which have afflicted mankind at some time in every part of the world.

Living as we do in this clean, comparatively well sanitated and healthful land, it is difficult to visualize the deplorable health conditions that existed even here from colonial times until late in the last century,

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when the development of microbiology afforded a sound basis for rapid advances in medicine and public health. During that long period most of the temperate-zone diseases were prevalent here, and the country was invaded repeatedly by many serious exotic scourges, including smallpox and louse-borne typhus from Europe, malaria and yellow fever from Africa and Latin-America, and Asiatic cholera from India.

During the present century, great progress has been made in American health; the span of human life has been increased; many of our endemic diseases have been controlled; and since the New Orleans yellow fever epidemic of 1905, this country has not had a serious invasion by tropical disease. Therefore, except for malaria, dengue, and the dysenteries, which still exist in certain regions, our twentieth-century experiences with such diseases have occurred largely outside the continental United States and among Americans who have gone into tropical regions for military, social, or industrial purposes. Consequently, prior to the war, the people of this country gradually lost interest in tropical medicine, and by 1940 many of our physicians were convinced that the diseases of the tropics were no longer a serious threat to the nation's health.

The Development of the Army's Program to Combat Tropical Diseases

This was the situation when The Surgeon General of the Army began his planning to meet the medical hazards of the second world war. This planning included an effective organization developed to protect American troops against the diseases of the tropics and to prevent the introduction of such diseases into the United States.

As the scene of military operations reached out to include first the Caribbean, and later Africa, India and the far Pacific, tropical-disease control became one of the army's most important medical problems. The experience acquired in meeting this problem is of great value to the medical profession, for it affords a pattern for the future protection of the United States.

The first need was for doctors trained in tropical medicine. Many of our army physicians, recruited largely from civilian life, were confronted with disease situations with which they had had little or no practical experience. The profession had lost interest in tropical medicine, and the teaching of this subject in our medical schools was generally either inadequate or altogether lacking. The Surgeon General attempted to meet this deficiency by providing special courses in tropical medicine for medical officers after they entered the service, and troops were instructed in tropical sanitation and field hygiene. At best, however, only a small fraction of the physicians in need of such instruction could be reached in this way. Consequently, a longer-range program was planned. A grant was secured from the John and Mary R. Markle Foundation to improve the teaching of tropical medicine in the civilian medical schools which were training future officers for the army and navy. Sixty-three of our seventy-seven medical schools took advantage of the invitation to send members of their faculties for an eight-weeks' course in tropical medicine at the Army Medical School, or for a month's field experience in tropical Central America. Experts in entomology, bacteriology, parasitology, malariology, and sanitary engineering were mobilized to attack tropical diseases in the field, and specially trained internists were made available to take care of the sick.

An extensive program of research in tropical medicine was also carried out by the army, using both military and civilian scientists. This was closely coordinated with the investigative programs of the navy and the U. S. Public Health Service, and all three were supplemented and spearheaded by the great medical research program sponsored by the National Research Council and the Committee on Medical Research of the Office of Scientific Research and Development. The cost of this national research effort was high, but the investment paid rich dividends by providing more effective methods and agents for the control of tropical diseases. Protective clothing and new repellents and insecticides were produced with which to attack the insect-borne diseases. New drugs, such as the sulfonamides and penicillin, were made available for the treatment of various types of infection. Improved vaccines were adopted for use against yellow fever, epidemic typhus, influenza, tetanus and Japanese B encephalitis; and new therapeutic agents were developed and used for the suppression and treatment of malaria. These results and others too numerous to mention here contributed directly to the conservation of American manpower and the winning of the war; moreover they will provide more

effective and economical methods for the future improvement of world health.

The importance of all this careful planning is indicated by the results. Our troops were in contact with exotic diseases in all the four corners of the earth, but the army made a spectacular record in preventive medicine. Millions of soldiers were exposed to louse-borne typhus in Africa, Europe, and Asia, but they were protected by typhus vaccine and DDT powder. Thanks to cholera vaccine and military sanitation, others served without infection in the cholera-ridden cities of India. Vaccines, rodent control, and DDT were used to protect troops exposed to civilian epidemics of plague in Africa and elsewhere. Soldiers passing through the endemic yellow-fever areas of South America and Central Africa were immunized with yellow-fever vaccine. In brief, the army was completely protected against these and other diseases, including smallpox and the typhoid fevers. Still others, including leprosy, yaws and African sleeping sickness, failed to appear.

Tropical Diseases Occurring Among American Troops

There were a few hundred cases of relapsing fever and leishmaniasis, but these were so rare that they were looked on as medical curiosities and considered of slight importance. Some of the more important diseases occurring among our troops were as follows:

Dengue and sandfly fever

Dengue and sandfly fever, two mild, nonfatal diseases, which are transmitted by mosquitoes and sandflies respectively, occurred in a number of tropical regions. When troops are first exposed, these infections tend to occur as explosive epidemics, which incapacitate large numbers of men within a short period of time. This was true of sandfly fever in Sicily and of dengue at Saipan and other bases in the Pacific. During the war there were 82,400 cases of dengue and 12,000 cases of sandfly fever. Recently the Army Epidemiological Board has developed an attenuated virus as a vaccine against dengue, but there has been no opportunity to test its effectiveness in the field.

Sandfly fever probably has never existed in the United States, because of the absence of its known insect vectors. However, many epidemics of dengue have occurred in our Southern states, where the disease is carried by Aedes aegypti, the common urban vector of yellow fever. The incubation period is, uually, six to ten days. During the war outbreaks often occurred among troops in Pacific stations within one or two days' flying time of the continental United States. Thus, while quarantine procedures provide an effective barrier against a person sick with dengue, individuals might arrive in this country during the incubation period and pass the quarantine barrier undetected. Although dengue already exists here, new strains of virus could be introduced in this manner and create epidemics. This possibility also applies to Japanese B encephalitis, an outbreak of which occurred among the civilians of Okinawa last summer. Hence, the control of Aedes and other Culicinae mosquitoes which transmit such diseases is an integral part of the anti-mosquito program at army bases and airports on the West Coast.

Filariasis

Filariasis, another mosquito-borne disease, was contracted by a few of our soldiers overseas. It attracted popular attention because of the fear of its chronic complication, elephantiasis. However, there were only about 2000 cases, all of which were mild, with no serious permanent symptoms. These infections were acquired early in the war on a few small islands in the South Pacific which were hurriedly garrisoned with troops who at first lived in close association with heavily infected natives. The mosquito vector in these islands, a day-biting species, Aedes scutellaris pseudoscutellaris, was abundant, and protective measures were inadequate. After mosquito control was enforced, few new cases developed. Infected soldiers were sent home as soon as the disease was recognized, in order to prevent further exposure. Serious complications such as elephantiasis did not occur, as continued reinfection over a long period of years is necessary to produce this condition. The clinical signs observed were enlarged lymph nodes, localized painful swellings, particularly of the genitalia, and a characteristic retrograde lymphangitis. These symptoms appeared in a series of acute attacks lasting from a few days to one or two weeks. After the soldier was removed from the endemic area, the attacks became less frequent and usually ceased altogether within a few months.

The most important aspect of filariasis in service men was its psychological effect. Patients often became seriously worried about the outcome of the disease, and some feared sterility or possible transmission of the infection to their families. Fortunately, it was possible to reassure them by calling attention to the high birth rate among island natives, practically all of whom were infected.

Intensive studies of all military patients were made, but because of the mildness of the infections, it was rarely possible to demonstrate microfilariae in the circulating blood. Therefore, there was little or no chance that such patients would infect mosquitoes or spread the disease. Suitable mosquito vectors occur widely in the United States, but filariasis has never been endemic here, except for a small focus in Charleston, South Carolina. However, there was no spread from this focus, and apparently the disease has died out spontaneously without resort to special anti-mosquito measures.

The chance of establishing new endemic areas in this country is considered slight, but precautions have been taken to prevent the concentration of microfilariae carriers in groups, as for example in prisoner-of-war camps. However, the army, navy, and U. S. Public Health Service have agreed that, as a rule, it is not necessary to restrict the location or movements of single individuals who harbor microfilariae.

Schistosomiasis

Schistosomiasis is another tropical worm disease, which attained considerable military importance during the invasion of Leyte. This disease, caused by the oriental blood fluke, Schistosoma japonicum, was acquired when troops waded or bathed in fresh water infested with the larval stages which develop in certain snails. The larvae, called cercariae, penetrate the skin and grow to the adult stage in the mesenteric veins. If not treated, the disease may cause serious complications. Some of the eggs laid by female worms in the mesenteric vein are swept back into the liver, where they eventually cause cirrhosis if they accumulate in sufficient numbers. Therefore, early recognition of the infection and thorough treatment with an antimony drug—either tartar emetic or fuadin—is highly important. Since one course of treatment may not be completely effective, follow-up examinations and retreatment are frequently necessary. Diagnosis by the demonstration of eggs in stool specimens may be difficult unless modern concentration techniques are employed and repeated examinations made.

Less than 2000 cases of schistosomiasis were reported, and most of these occurred in members of the Engineer Corps and Signal Corps, whose duties required exposure in infested waters. Others were needlessly exposed through carelessness and disobedience of orders.

To promote control, lecture teams equipped with charts and posters went into action and educated troops concerning the serious nature of the disease and methods of avoiding it. In the three months following this educational campaign, only one new case was reported and this was in a man who accidentally fell out of a boat and had to swim ashore through infested waters.

Every effort has been made to detect and treat schistosomiasis in men exposed during the Philippine campaign and in returned prisoners of war who were in the hands of the Japanese. Some cases may have been missed, and a few veterans may still develop chronic infections. However, the chance of spreading the infection in this country from such sources is considered remote, because susceptible snail hosts for the parasites are not known to occur in the United States.

Scrub typhus

The rickettsial infection known as "scrub typhus" and formerly call tsutsugamushi disease or "Japanese river fever" was of considerable military importance in certain parts of the Western Pacific and in Burma. Thanks to the control measures, there were less than 7000 cases in the entire army during the war; but the mortality varied from 1 to 30 per cent in the different outbreaks. The disease is transmitted to man by larval mites, or chiggers, which infest the kunai grass of New Guinea and the jungle undergrowth of other regions in the Far East. It is related to epidemic typhus, but the causative organism is different and our typhus vaccine does not protect against it. Moreover, we have no specific treatment. Effective control methods, however, were developed within a short time after its first appearance. Dimethyl phthalate or other insect repellents were used to protect men against the larval mites. A field method for the impregnation of clothes with an emulsion of the repellent in soapy water was developed by

the U. S. of America Typhus Commission and used widely during the later campaigns in New Guinea and in the Philippines. Another important measure was the careful selection of camp sites free from infected mites, or detruction of the mites by burning off the grass and scrub on which they live.

In non-fatal cases, recovery from scrub typhus appears to have been complete, and chronic infections are unknown. Therefore, this disease should not constitute a problem for civilian physicians in this country. Chiggers are common in the Southern United States, but they differ from those in the Orient, and even if scrub typhus should be introduced, we know of no vector which would spread it in this country.

Malaria

Malaria was the most important tropical disease faced by the army during the war. Our control program in the continental United States was highly effective. About $17,000,000 was spent on anti-mosquito work inside the military reservations, and this work was supplemented in the adjacent civilian areas by a similar program sponsored by the U. S. Public Health Service at a cost of $19,000,000. In 1939 the incidence of malaria among troops in this country was the lowest recorded since the Revolutionary War. The malaria morbidity continued to decrease progressively each year from 1940 to 1946. Although millions of Americans were mobilized and trained in our Southern states, only 4000 cases of malaria were contracted locally during this period.

Overseas the story was quite different. From January, 1942, to August, 1945, 440,000 soldiers were hospitalized for malaria. Of these, approximately 365,000 were admitted to hospitals abroad and 75,000 to hospitals in the United States, nearly all of the latter representing relapses of infections acquired overseas. There were only 226 deaths from malaria during this entire period. The low case fatality rate of only 1 in 2000 attests the high quality of the medical care afforded. Because of the absence of records, the hospital admissions and deaths in the Philippine Islands before the reoccupation in October, 1944, are not included in these figures.

Most of the malaria occurred early in the war when the military situation required that troops fight in highly malarious regions without adequate malaria-control supplies or protection from mosquitoes. Later, when control organizations were firmly established, supplies became adequate, and soldiers were thoroughly disciplined in personal protective measures, the incapacity from malaria was greatly reduced. In 1945 the admission rate for the total army overseas was only 25 per 1000 men, compared to the peak rate of 160 in 1943.

Soldiers who had malaria are given adequate treatment before discharge, but many of these men will still harbor latent infections and will suffer relapses after returning to civilian life. This is inevitable because in some individuals the benign tertian type of malaria caused by Plasmodium vivax will continue to recur for several years after the initial infection, in spite of thorough treatment with the best drugs now available. The more dangerous estivo-autumnal or malignant tertian malaria has not been a serious military problem, because it is usually completely cured by atabrine.

The army has taken action to prevent the spread of malaria from returning troops to civilian populations. Effective anopheline control is maintained at all military installations, including hospitals, throughout the country. During the last two years the extramilitary mosquito control program of the U. S. Public Health Service has been intensified in selected locations in the Southern states, where the risk of transmission is considered greatest. Consequently, no significant number of civilian cases of malaria have been traced to overseas veterans.

The wartime research program has included a search for new anti-malarial drugs. About 15,000 chemical compounds have been tested, and several new drugs have been developed which have certain prophylactic and therapeutic advantages over atabrine.

One of the most promising of these, formerly known as SN 7618, has recently been designated as "chloroquine." This drug will suppress malaria when given only once a week in doses of 0.3 Gm., and it does not discolor the skin. Like atabrine, it promptly controls acute attacks of malaria, but it does not prevent the recurrence of vivax infections. Thus, it cannot be considered a miraculous new cure, but it may prove valuable for military use. Chloroquine and various other new drugs are still being tested in military hospitals.

The army's experience shows that malaria can be controlled, but it re-emphasizes the

fact that such control is costly and requires continuous vigorous action. Malaria is now on the decline in the United States, and we hope that it is destined to be eliminated. However, it will always remain a potential hazard which must be reckoned with as long as this country's interests extend into the hot regions of the globe.

Dysentery and skin diseases

Other important tropical diseases encountered by the troops include the diarrheas and dysenteries, which caused considerable loss of time, but relatively few deaths; and the prevalent skin diseases, which, though usually not dangerous, caused much loss of time.

Implications for the Future

Since the beginning of the war The Surgeon General of the Army has been actively concerned with protecting this country against invasion by these various exotic diseases. He has cooperated with the navy and the U. S. Public Health Service in forming an Interdepartmental Quarantine Commission to guard the air routes and waterways against disease agents, and their animal and insect carriers. The work of this commission has been supplemented by the careful screening of troops through physical inspection and examinations all along the route from the overseas theaters to their homes. Special examinations were required for those with a recent history of exposure to tropical infections. On the whole, these barriers against foreign disease have been effective. In a few instances—as, for example, the recent smallpox episode in California—certain diseases have slipped through. However, they have been promptly identified and stopped, and there have been no serious civilian epidemics traceable to returning troops.

The experience of the army with tropical diseases in World War II has jolted the complacency of those who formerly assumed that tropical medicine was no longer of concern to the people of the United States. It has shown that such diseases still constitute a hazard to Americans who may be exposed in many foreign countries. It suggests the possibility that dangerous exotic diseases might again invade this country. Finally, it indicates the need for a continuous national program of research and training in order to control these diseases effectively, both in this country and in their native haunts.

It is therefore important that not only medical educators but the profession at large appreciate the fact that the tropical diseases will continue to occupy an important place in world medicine. We cannot afford to neglect this subject in our medical curricula, for a continuing interest in tropical medicine is essential to our national health and welfare. The development of still more effective methods for protecting troops in the field in tropical regions will not only be helpful in any future war, but it will assist American business in protecting its personnel and laborers operating in such places. The raising of health standards among the primitive peoples of many tropical regions will result in improvements in agriculture and better standards of living, thus helping to create new world markets and contributing to the growth of international trade. The maintenance and strengthening of our wartime quarantine barriers will insure against a recurrence of the crippling disease invasions of the past. Finally, the complete eradication of the tropical diseases already endemic in this country, especially malaria and the intestinal infections, will restore to full agricultural and industrial productiveness large numbers of our own people.

In closing, I should like to re-emphasize the fact that we are still concerned with tropical diseases. We must be prepared to protect our people traveling or living in tropical countries. We must maintain the precautions required to prevent the introduction of tropical diseases into this country and the aggressive program necessary to prevent their spread. The American medical profession has successfully met the challenge of the tropical diseases under the trying conditions of war. It can and must continue to meet it during the future years of peace.

Thanks to a little known German microscope found by an Army colonel in the bomb-wrecked Zeiss laboratories in Jena, Germany, medical staffs in Veterans Administration hospitals are learning the secrets of how living cells subdivide, multiply and generally go about the business of life. The instrument is a "phase microscope" and was kept secret for 10 years by the Nazis.

Col. Arthur T. Brice, former VA medical technical expert, brought back the microscope and moving picture films of cell growth taken through the instrument.

VA officials explained that the motion picture is significant because it shows better than ever before the mysterious processes of the microscopic world of living cells. Because of its unique lighting arrangements, it is possible actually to photograph the growth of cells.

POLIOMYELITIS IN NORTH CAROLINA

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RALEIGH

In 1944 North Carolina had the largest number of cases of poliomyelitis ever reported in the state. The following is a report of some of the basic statistical data concerning North Carolina's experience with this disease over a period of years, and particularly during the 1944 epidemic.

Incidence

The reporting of communicable diseases was not required in this state before 1918. Table 1 lists the number and incidence of poliomyelitis cases reported annually from that time through 1945. For this period the average annual number of reported cases, including the epidemic years, is 116 or 3.4 per 100,000 population; exclusive of the epidemic years, the average annual number of cases is 64.

North Carolina's experience in regard to the general incidence of the disease corresponds to that of many other states. The occurrence of poliomyelitis over a period of twenty-eight years in a sample group of states is shown in figure 1[1]. There seems to be no definite pattern of incidence in any one state or group of states. Even adjoining states have totally different experiences —for example, California and Oregon, and Minnesota and Iowa. There has been no definite periodicity between epidemics for the nation as a whole. Since 1918 North Carolina has had major outbreaks during only two out of the five highest years for the nation.

Seasonal incidence

The number of cases developing in each month of the year 1935 and of each year since 1940 is shown in figure 2. It will be noted that July and August constitute the peak months in the non-epidemic years, while in the 1935 and 1944 outbreaks June and July were the heaviest months. It is also apparent that the annual poliomyelitis cycle

Table 1

Poliomyelitis Cases Reported in North Carolina from 1918 to 1944

Year	*Total Cases*	*Cases per 100,000 Population*
1918	23	0.9
1919	43	1.7
1920	24	0.9
1921	36	1.4
1922	30	1.2
1923	16	0.6
1924	16	0.6
1925	79	2.8
1926	112	3.9
1927	24	0.8
1928	51	1.8
1929	133	4.0
1930	96	3.0
1931	104	3.2
1932	54	1.6
1933	30	0.9
1934	45	1.4
1935	675	21.3
1936	52	1.5
1937	106	3.0
1938	50	1.4
1939	116	3.3
1940	74	2.1
1941	168	4.7
1942	82	2.0
1943	36	1.0
1944	878	23.0

runs from approximately April to April, with a rapid rise in May and June and a long, gradual decline following the peak. Thus, the 1944 epidemic extended to April, 1945, giving rise to a certain amount of alarm during the first part of 1945.

The seasonal incidence of the disease in the United States also shows the April-to-April cycle. The annual peak for the nation occurs about a month later than that for North Carolina.

A more detailed picture of the course of the disease during the season is shown by figure 3, prepared from data concerning the North Carolina 1944 epidemic only. The cases occurring each day are shown for the summer and fall months. The largest number of cases developing per day occurred during the latter part of June. It will be noted that the peak of our epidemic actually occurred during the latter part of June, even though the total number of cases for July exceeded the total for June.

Location of cases

During the 1935 epidemic the east central part of the state was chiefly involved, as is shown diagrammatically in figure 4. During the eight-year period between 1935 and 1944 the cases were more or less generally distributed over the state, with a relative concentration of cases in a few small counties (fig.

Read before the First General Session, Medical Society of the State of North Carolina, Pinehurst, May 2, 1946.

Grateful acknowledgment is due the National Foundation for Infantile Paralysis, Inc., for supplying funds to aid in the preparation of the illustrations accompanying this article.

1. Dauer, C. C.: Prevalence of Poliomyelitis in the United States in 1943, Pub. Health Rep. 59:712-719 (June 2) 1944.

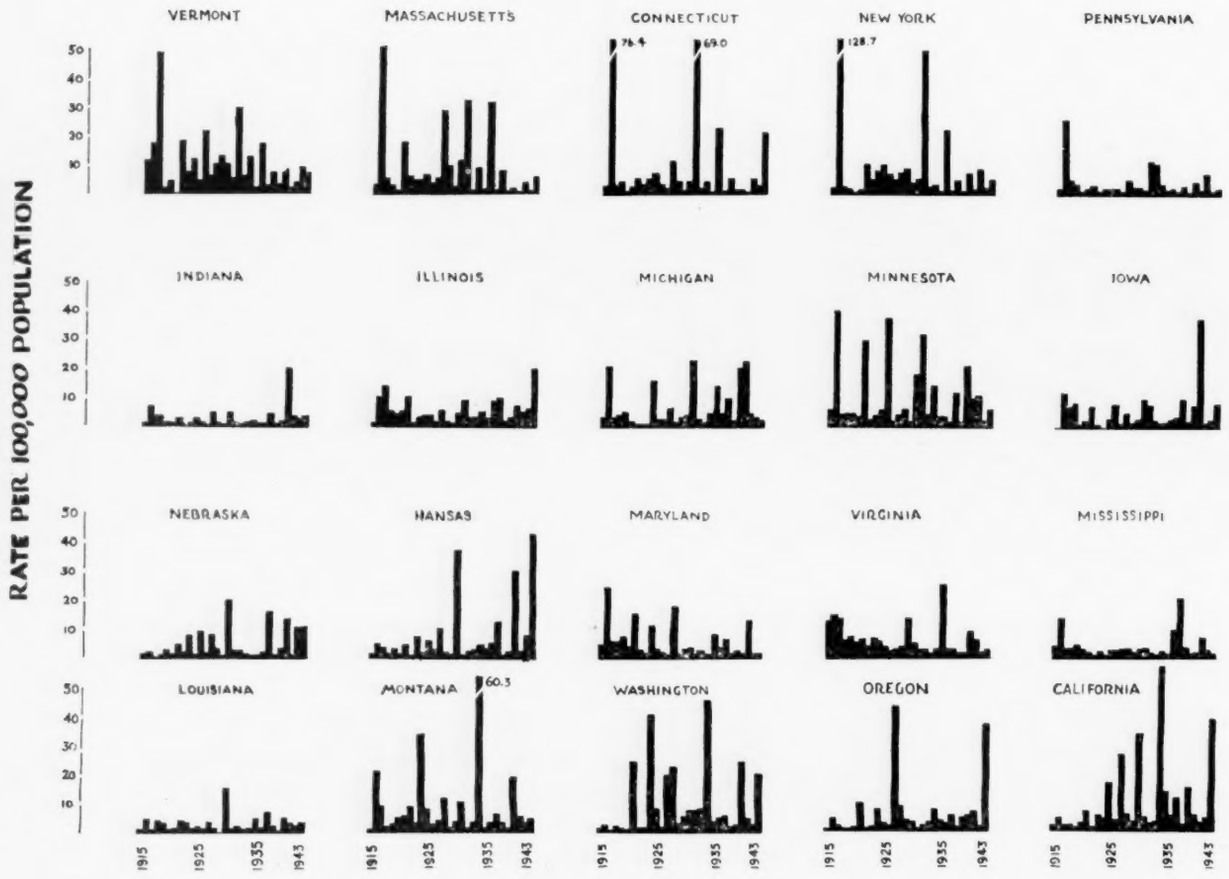

Fig. 1. Poliomyelitis annual morbidity rates for certain states, 1915-1943 (from Dauer[1]).

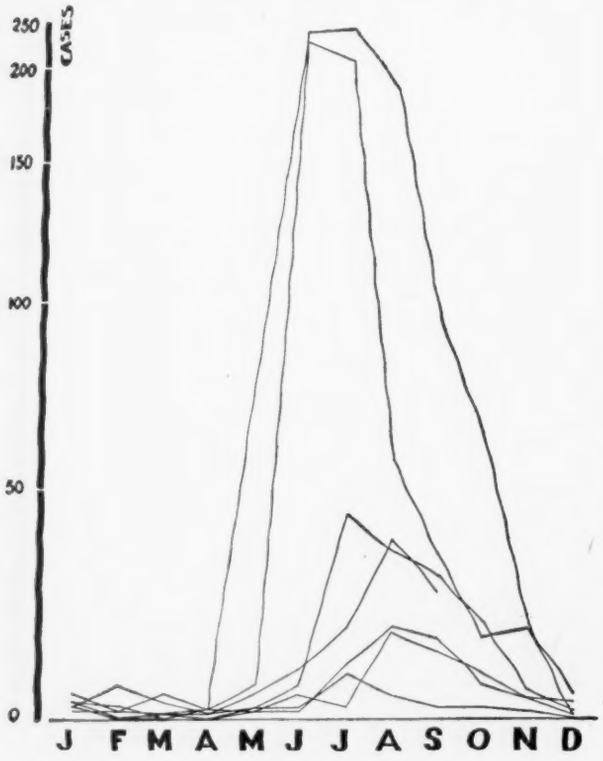

Fig. 2. Seasonal incidence of poliomyelitis in North Carolina by date of onset, 1935 and 1940-1945.

5). In 1944 the outbreak showed a marked localization in the west central part of the state (fig. 6).

The spread of the 1944 epidemic is shown in figures 7, 8, and 9. The epidemic was divided into periods of five weeks each. The cases occurring in each of the first three periods are shown separately in chronological order.

The first counties to be heavily involved were the first to show a definite decline in the number of new cases. The disease appeared in a widening circle around the original area, and by fall had become thinly scattered over most of the state.

Age incidence

The age distribution of the cases occurring in the 1935 and the 1944 outbreaks, as compared with that of the total group of cases reported in the intervening period, is shown in figure 10. There are no very remarkable differences in the ages involved in these three groups; however, the number of younger children affected was slightly less in 1944 than in previous years, and the

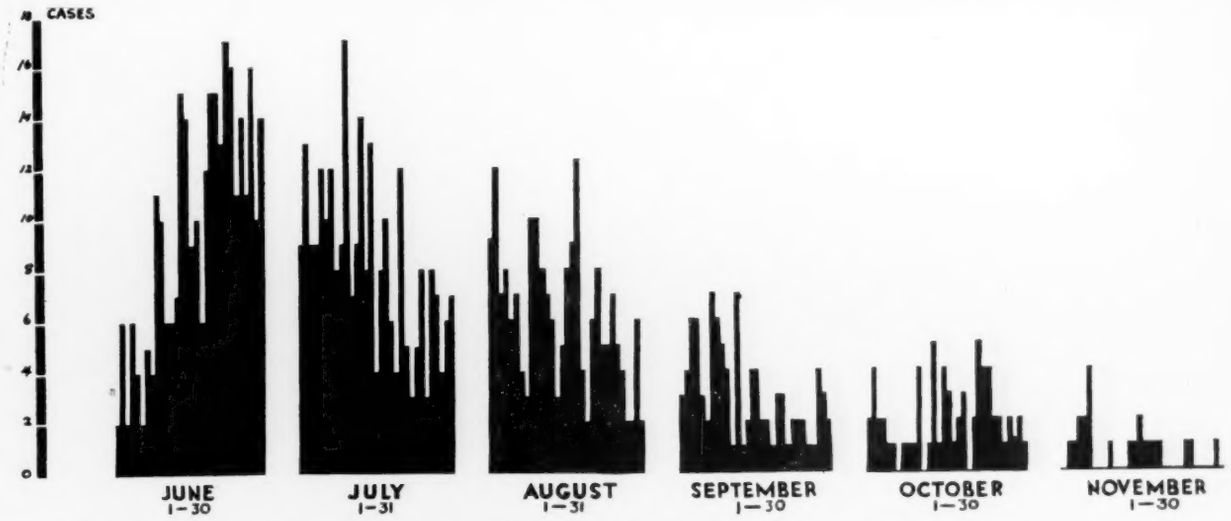

Fig. 3. Dates of onset of poliomyelitis cases in North Carolina from June to December, 1944

number of older persons involved was slightly less in the interepidemic period. The ages of the patients in the 1944 epidemic are shown more clearly in figure 11. Most of the patients were between 1 and 15 years of age, although approximately 6 per cent of the cases occurred in patients over 20.

The incidence of poliomyelitis in the 1944 epidemic was definitely lower in infants under 6 months of age than in children 6 to 12 months of age. This has been a consistent finding in the North Carolina morbidity data over a period of years. The fact that newborn infants usually show antibodies if the mother is immune was reported by Aycock and Kramer in 1930[2].

There was no apparent relation between the date of onset and the age of the patients. When the cases reported for each of seven five-week periods are distributed according to age, the pattern is essentially the same for each of the periods.

Race and sex incidence

For the ten-year period 1935 through 1944 there were slightly fewer females than males involved in each of the race groups, but the difference did not hold true for each year in the period.

The 1944 attack rates for the three races, without regard to sex, are shown in table 2. In the state as a whole, the attack rate for the white race is four times that for the colored race. If the rate is calculated only for the ten most heavily affected counties, this difference is not so striking. For those ten counties the white attack rate is 106.8 cases per 100,000 population, the colored rate 62.5—a white to colored ratio of about 2 to 1. This race disparity in the attack rates is probably real since, as will be seen later, there is a corresponding difference in the death rates.

Table 2
Poliomyelitis Cases Reported in North Carolina for 1944 by Race

WHITE		COLORED		INDIAN	
Cases	*Rate per 100,000 pop.**	*Cases*	*Rate per 100,000 pop.**	*Cases*	*Rate per 100,000 pop.**
801	31.7	74	7.9	3	13.6

* Only the population of those counties reporting cases was used in calculating the rates.

Differences in race and sex appear to have no striking influence on the age distribution.

Mortality

A comparison between the general death rate and the case fatality rate is shown in figure 12. It will be noted that during the epidemic years the total deaths were increased but the case fatality was decreased. There are at least two possible explanations for the apparent inconsistency in the case fatality rate. First, the reporting of cases may be so much less efficient in years when the disease is uncommon as to account entirely for the increase in the reported case fatality. Second, the lower case fatality rate during epidemics may be due to the fact that the disease in its epidemic form is caused by a less virulent strain of the virus, or to some other factor, as yet unknown.

Table 3 gives the case fatality rates for the counties in which deaths occurred during 1944. There is an extremely wide variation in the case fatality rates for the counties having relatively small numbers of cases.

2. Aycock, W. L., and Kramer, S. D.: Immunity to Poliomyelitis in Mothers and the Newborn as Shown by the Neutralization Test, J. Exper. Med. 52:457-464 (Oct.) 1930

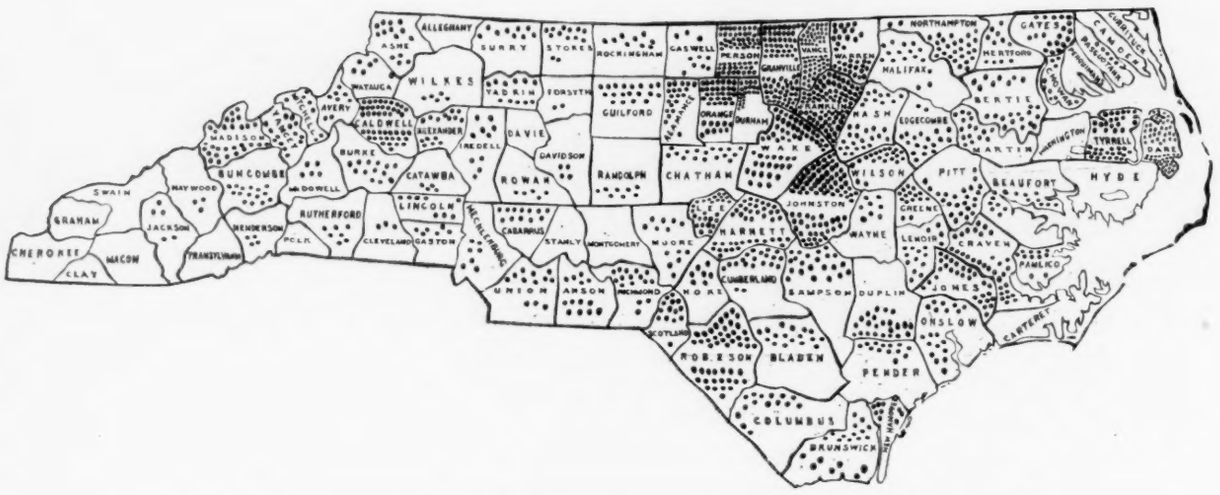

Fig. 4. Poliomyelitis cases per 100,000 population in North Carolina, 1935.

Fig. 5. Poliomyelitis cases per 100,000 population in North Carolina, 1936-1943.

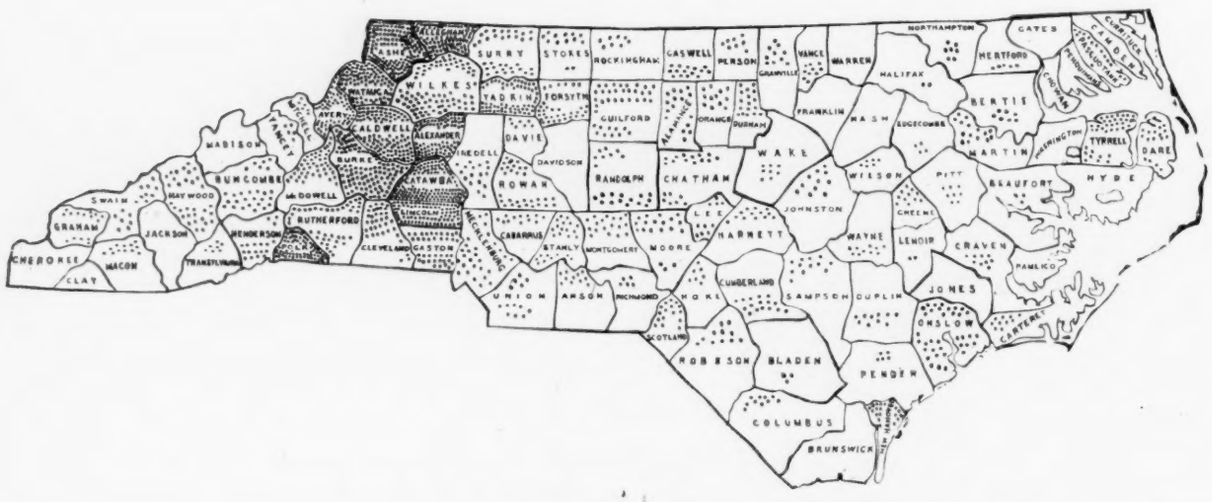

Fig. 6. Poliomyelitis cases per 100,000 population in North Carolina, 1944.

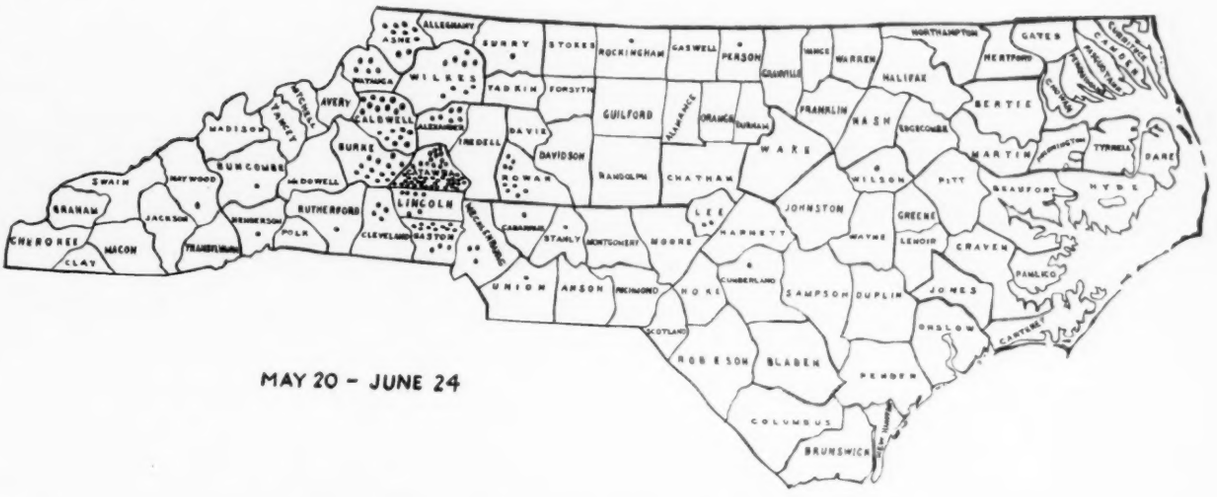

Fig. 7. Poliomyelitis cases in North Carolina, May 20-June 24, 1944

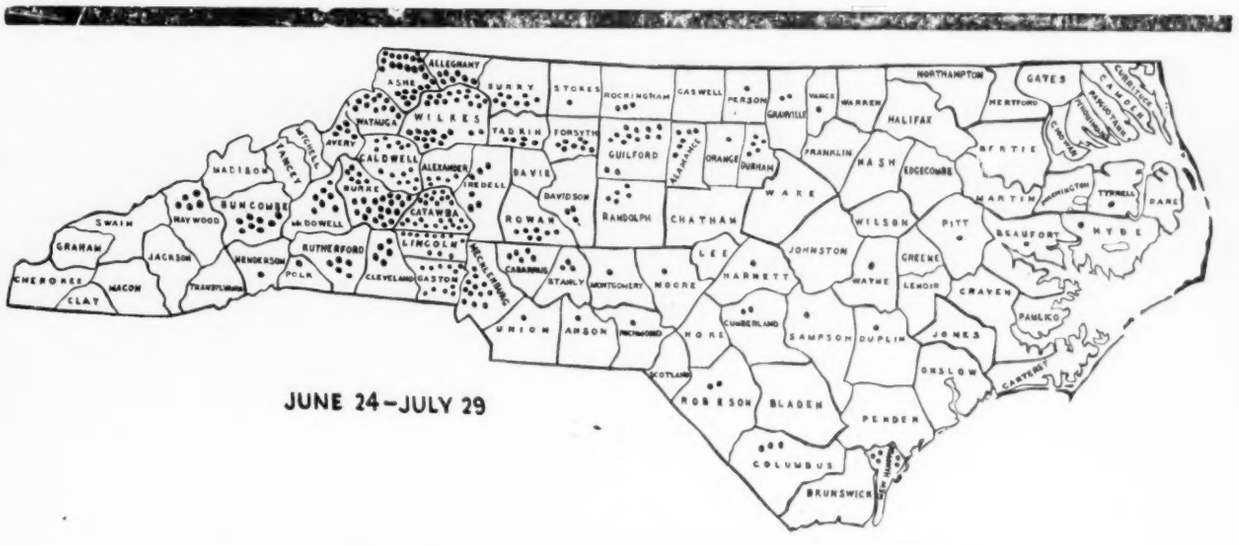

Fig. 8. Poliomyelitis cases in North Carolina, June 24-July 29, 1944

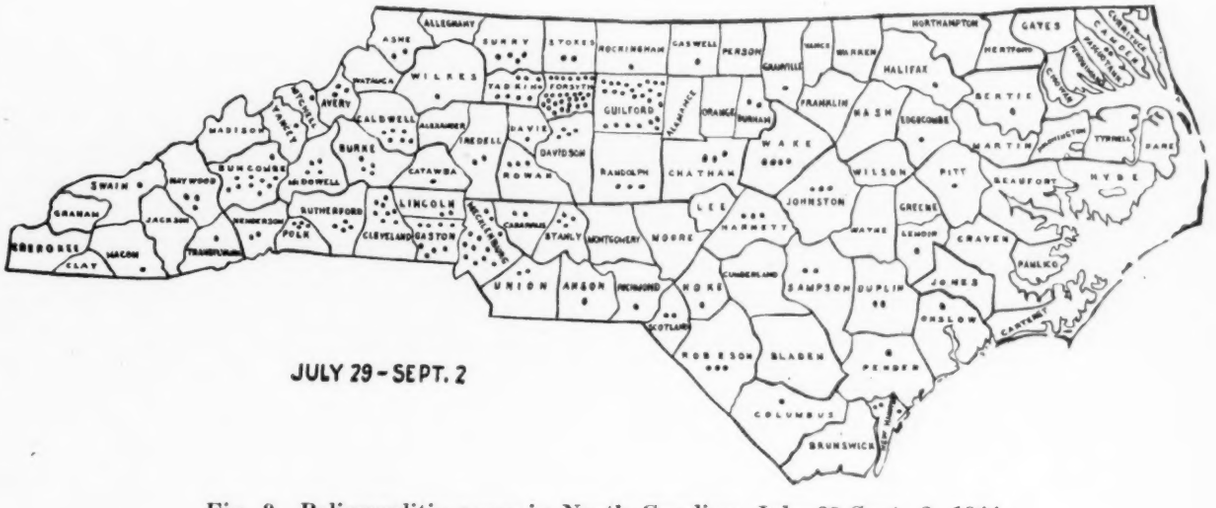

Fig. 9. Poliomyelitis cases in North Carolina, July 29-Sept. 2, 1944

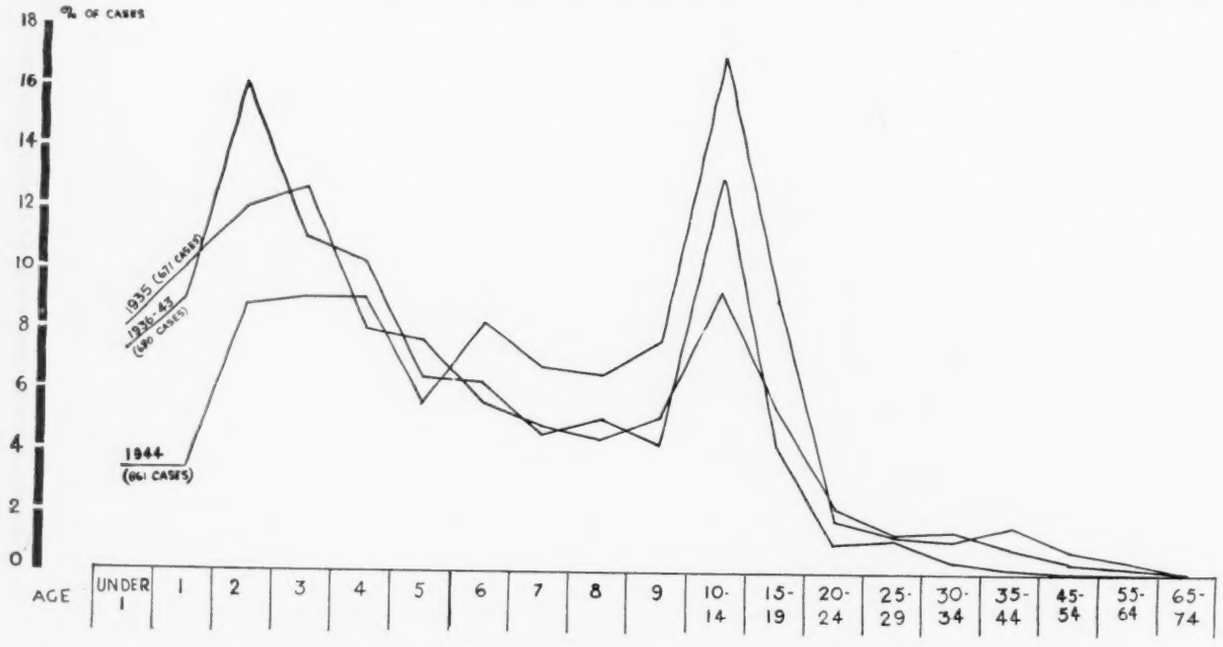

Fig. 10. Percentage of poliomyelitis cases in certain age groups in North Carolina

Table 3

North Carolina Poliomyelitis Case Fatality Rates for 1944 in Counties Where Deaths Occurred

County	*Deaths*	*Cases*	*Case Fatality Rates*
Catawba	4	73	5.4
Guilford	3	57	5.4
Cumberland	2	11	18.2
Cleveland	2	22	9.0
Haywood	2	12	16.6
Mecklenburg	2	42	4.7
Onslow	2	7	28.5
Wilkes	2	37	5.4
Alamance	1	10	10.0
Ashe	1	36	2.7
Buncombe	1	30	3.3
Burke	1	44	2.2
Caswell	1	3	33.3
Duplin	1	4	25.0
Forsyth	1	44	2.2
Gaston	1	34	2.9
Graham	1	1	100.0
Granville	1	3	33.3
Iredell	1	9	11.1
McDowell	1	11	9.0
Macon	1	2	50.0
Martin	1	4	25.0
New Hanover	1	9	11.1
Orange	1	3	33.3
Person	1	2	50.0
Randolph	1	11	9.0
Stokes	1	3	33.3
Wayne	1	6	16.6

The counties reporting less than 30 cases had case fatality rates up to 100 per cent; however, in nine counties reporting more than 30 cases the case fatality rate was between 2 and 5 per cent. The large number of counties reporting cases but no deaths gives a case fatality rate of 4.4 per cent in the state as a whole for the year.

Mortality as related to sex, color, and age

For the ten-year period 1935 through 1944, the number of deaths for all races was slightly smaller among females than among males. The *case* fatality rate for males in 1944 was 4.6 per cent and for females 4.2 per cent.

Table 4

Poliomyelitis Deaths in North Carolina for 1944 by Race

WHITE		COLORED	
Deaths	*Rate per 100,000 pop.**	*Deaths*	*Rate per 100,000 pop.**
36	1.4	3	0.3

* Only the population of those counties reporting cases was used in calculating the rates.

The 1944 death rates for the white and colored races are compared in table 4. The white death rate is approximately four times the colored death rate — a ratio which is practically identical with the ratio of attack rates. The 1944 *case* fatality rate for the white population was 4.4 per cent, as compared with 4.5 per cent for the colored. There were no Indian deaths reported for that year.

The relationship of age to the case fatality rate in the 1944 epidemic is shown in figure 13. There appears to be a definite reduction in the case fatality after the age of 1 year to about 4 or 5 years and, after an intermediate period of low mortality from 5 to 20 years, there is a rapid increase in mortality among the older groups. The irregularity in the graph is possibly due to the relatively small number of deaths used for analysis. A study of a larger number might show a smooth curve.

Fig. 11. Age incidence of poliomyelitis in North Carolina, 1944

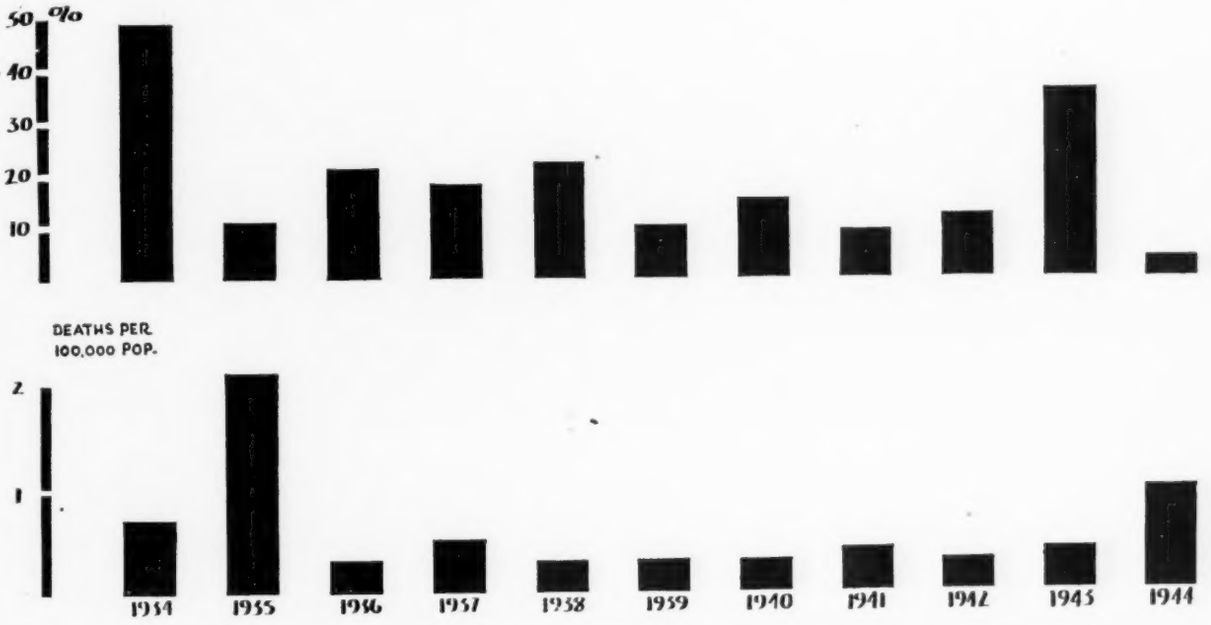

Fig. 12. Poliomyelitis case fatality rates and death rates in North Carolina, 1934-1944

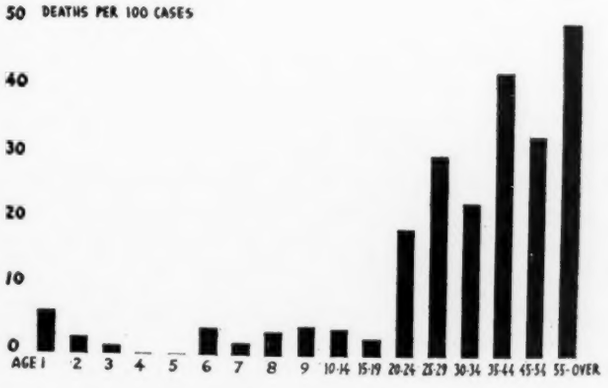

Fig. 13. Poliomyelitis case fatality rates in North Carolina by age groups, 1944.

Multiple Infections in Single Families

During 1944 there were 17 instances of 2 cases of poliomyelitis in a single family and 1 instance of 3 cases in a family—a total of 37 cases, constituting 4 per cent of the number of cases reported for the year.

Table 5 shows the days elapsing between the onsets of the cases in each family. It will be noted that in 13 out of 18 families the second case occurred within seven days of the first. In the family with 3 cases, the total time between the onset of the first case and the third was only eight days.

Three of the families in which 2 cases occurred were colored. The remainder of the multiple cases occurred in white families.

Table 5

Days of Onset between Multiple Cases Occurring in Single Families in North Carolina during 1944

Number of Families Having 2 Cases	*Days between Onsets*
3	1
2	2
2	4
1	5
2	6
3	7
1	8
1	13
1	17
1	71
Number of Families Having 3 Cases	*Days between Onsets*
	5
1	3

The colored cases made up 16 per cent of the group—or almost twice the percentage of colored cases among the total number of cases reported for the year.

Summary

The chief points of interest in the statistical data presented concerning the occurrence of poliomyelitis in North Carolina are as follows:

1. The long-term curve of the annual incidence of the disease in North Carolina as compared to that in other states gives no clear indicators that might be of value in forecasting epidemics.

2. The age groups most commonly affected in North Carolina are those from 1 through 15 years, with a small but important group over the age of 20 years amounting to approximately 6 per cent of the total number of cases reported. The number of cases occurring in the first six months of life is persistently lower than the number occurring in the second six months. The age distribution does not appear to change to any considerable extent from year to year, nor does it appear to be influenced appreciably by sex or color.

3. There was a consistent ratio of 4 to 1 between the white and colored attack rates in 1944.

4. The annual seasonal cycle of the disease runs approximately from April to April. During epidemics the peak of the curve of annual incidence has occurred in June and July, which is about one month earlier than in non-epidemic years.

5. Over a period of years the recorded poliomyelitis case fatality rate in North Carolina has varied from approximately 5 per cent to 50 per cent, with the lowest fatality rates occurring in the epidemic years and the highest in the years of lowest incidence. The case fatality rate of 4.4 per cent for 1944 was the lowest ever recorded, while the total number of the cases reported was larger than in any previous year.

6. There are no pronounced relationships between sex or color and mortality; however, age does have a striking influence on mortality. The case fatality rate in 1944 declined from 6.4 per cent at 1 year of age to 0 at 5 years of age. From 4 to 20 years of age the rate fluctuated between about 2 per cent and 5 per cent. After the age of 20 years the rate rose sharply to approximately 50 per cent at 55 years.

7. Multiple cases in single families accounted for 4 per cent of the total number of cases reported in 1944. Sixteen per cent of this group were in colored families, while the percentage of colored cases among the total reported for the year was only 8.

THE ROLE OF HYPERIMMUNE HUMAN SERUM IN THE PREVENTION AND TREATMENT OF PERTUSSIS

EDWIN P. EWERS, M.D.

WARSAW

Pertussis leads the so-called preventable diseases of childhood in fatalities, and causes more deaths annually than diphtheria and scarlet fever combined. In 1945, there were 5,817 cases of whooping cough in North Carolina with 92 deaths (table 1), and in the past six years the mortality rate has not shown any decline. Yet we have active immunization against this disease and, with the use of specific serotherapy, an effective agent for treatment and prevention.

Active Immunization

At present the active immunization of children for the routine prophylaxis of whooping cough is accepted by the medical profession. Felton and Willard[1] in a recent report for the Council on Pharmacy and Chemistry concluded that whole bacterial vaccines (prepared from virulent, phase 1 Hemophilus pertussis and given in proper dosage after 6 months of age) do confer significant protection as measured by reduc-

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1. Felton, H. M., and Willard, C. Y.: Current Status of Prophylaxis by Hemophilus Pertussis Vaccine, J.A.M.A. 126: 294-299 (Sept. 30) 1944.

tion in the attack rate and in the severity of the disease.

The greatest death toll from pertussis occurs in the first year of life. Approximately 70 per cent of the deaths occur during the first year, and 47 per cent occur in the first six months—that is, before the age at which immunization is recommended. Immunization of children less than 6 months of age has not been routinely performed because of the belief that these young infants do not possess the ability to develop active immunity. Sako, Trueting, Witt, and Nichamin[2], however, carried out an active pertussis immunization program on infants, beginning during the first three months of life. At monthly intervals the infants were given three injections of alum-precipitated pertussis vaccine—0.2, 0.3, and 0.5 cc. The vaccine was well tolerated by these younger infants; and, while pertussis occurred in an appreciable percentage of those exposed, the disease when contracted was milder, and none died.

The results of this study suggest that early protection against whooping cough is practicable and would reduce mortality. Sauer[3] recommends that all infants immunized before the sixth month be reimmunized after the seventh month, as the duration of immunity conferred so early in life is not known.

In the last few years mixtures of pertussis vaccine and diphtheria toxoid, and, more recently, triple mixtures, combining pertussis vaccine with diphtheria and tetanus toxoid, have become very popular because they reduce the total number of injections. Satisfactory protection can be obtained with these combined immunizations, but because diphtheria immunization is not effective until after the sixth month of life, pertussis vaccine alone should be used for immunization in the first few months of life.

On March 13, 1945, the General Assembly of North Carolina enacted a law requiring all children in the state to be immunized against whooping cough before reaching the age of 1 year. Dr. Stevick[4] of the North Carolina State Board of Health predicts that it will be five years before half of the children from 1 to 9 years of age will be immunized under the requirements of the new law.

Table 1

Whooping Cough Case Fatality by Age in North Carolina, 1945*

Age	*Cases*	*Deaths*	*Case Fatality Rate*
Under 1 year	613	64	10.4
1-2 yrs.	348	16	4.6
2-3 yrs.	774	6	0.8
3-4 yrs.	682	4	0.6
4-5 yrs.	715	0	0.0
5-9 yrs.	2,317	1	0.04
10-14 yrs.	315	1	0.3
15 years and over	53	0	0.0
TOTAL	5,817	92	1.6

* From the North Carolina State Board of Health.

Table 1, giving an analysis of the 1945 pertussis fatalities in North Carolina, according to age, shows that the highest fatality rate is in children under 1 year of age, and that after the age of 2 years the fatality rate is less than 1 per cent. There were only 2 fatalities in all the cases of pertussis in children over 4 years of age.

With over 5,000 cases of whooping cough in the state last year, it is evident that there are a great many young children who are not immunized against pertussis. These unimmunized children who contract the disease may transmit it to infants under 6 months of age who have not been immunized; to older infants during the process of immunization or before the expiration of the four-month period required by the body to build up an active immunity; or to one of the small number of immunized children who fail to develop adequate protection.

For these reasons a method of producing quick, effective passive immunity is needed.

Passive Immunization

The use of vaccine fractions, such as pertussis antigen, topagen, and undenatured bacterial antigens, has had its day. Lapin[5] states that carefully controlled clinical studies have shown these products to be ineffective in both prophylaxis and treatment.

Whole blood from convalescent pertussis patients has been used in an attempt to produce passive immunity. In 1935, Bradford[6]

2. Sako, W., Treuting, W. L., Witt, D. B., and Nichamin, S. J.: Early Immunization against Pertussis with Alum Precipitated Vaccine, J.A.M.A. 127:379-384 (Feb. 17) 1945.
3. Sauer, L. W.: Whooping Cough: Prevention and Treatment, M. Clin. North America 30:45-59 (Jan.) 1946.
4. Stevick, C. P.: Whooping Cough Immunization in North Carolina, North Carolina M. J. 6:369-372 (Aug.) 1945.
5. Lapin, Joseph H.: Serum in the Prophylaxis of Contacts and the Treatment of Whooping Cough, J. Pediat. 26:555-559 (June) 1945.
6. Bradford, W. L.: The Use of Convalescent Blood in Whooping Cough, with a Review of the Literature, Am. J. Dis. Child. 50:918-928 (Oct.) 1935.

reviewed the literature on the use of convalescent blood and serum, and concluded that immune serum is effective in the prevention and modification of whooping cough if it is given before the catarrhal symptoms appear, but that if it is given after the disease is established, favorable results are less apparent.

Reinforcement of the convalescent serum was accomplished by giving a series of injections of Sauer-type vaccine to donors who were known to have had whooping cough. After their agglutination titers were built up, blood was obtained and the serum was pooled. This serum is called hyperimmune human pertussis serum.

McGuiness, Bradford, and Armstrong[7] used lyophile hyperimmune serum in the prevention and treatment of pertussis. They gave the serum to 83 children who had been intimately exposed; 65, or 78.3 per cent, did not develop the disease, and of the 18 who did, 11 had it in a very mild form. These workers also used the serum in the treatment of 100 cases of pertussis; 32 showed an excellent response, 31 a good response, 20 a moderate response, 14 a questionable response; 3 patients died. In this series 51 of the children were under 6 months of age, and if the serum had not been used, the expected mortality would have been much higher.

Scheinblum and Bullowa[8] used lyophile hyperimmune pertussis serum in 23 critically ill children, 11 of whom had a complicating pneumonia. In the whole group 52.1 per cent showed a good response, 13.3 per cent a questionable response. Of the 12 children in this series who were under 3 months of age, 75 per cent responded moderately or well to the serum, and none died. The patients with pneumonia as a complication were given sulfadiazine in addition to the serum; but it was noted that their general condition did not improve until the serum was administered.

McGuiness, Armstrong, and Felton[9] reported further evidence of the value of hyperimmune serum in 1944. Three hundred and eight non-immunized patients were treated with hyperimmune human serum after exposure to whooping cough. The serum prevented the disease in 78.6 per cent, or 242 children. Thirty-one children, or 10 per cent, developed a mild form of the dissease without whooping and vomiting; 15, or 4.9 per cent, developed a mild form of short duration with whooping but no vomiting; and only 20, or 6.5 per cent, developed typical cases of whooping cough.

In this study a direct relationship between the amount of exposure and the degree of success that can be expected from the use of the hyperimmune human serum was also demonstrated. Fifty-six of the 308 patients had only a casual exposure. In this group 94.9 per cent did not develop pertussis. In those patients with an intimate exposure of short duration 83 per cent escaped, and in those thoroughly exposed by a member of the family 67.9 per cent did not develop the disease. Thirteen of the 20 patients who did not respond to the serum and developed unmodified pertussis were in this continuous exposure group.

McGuiness and his co-workers also reported on the use of hyperimmune human serum in 442 infants and children who had already developed pertussis with paroxysms. One hundred and seventy-six of these were 6 months of age or less, and 236 were under 1 year of age. Seventy and two tenths per cent showed an excellent or good response to the serum, 19.9 per cent a moderately good response, 8.6 per cent a poor response; there were 6 deaths (1.3 per cent). None of the children who died received the minimum recommended therapeutic dose of serum, and all but one were in the youngest age group. Twenty infants 6 months of age or less with pertussis complicated by bronchial pneumonia were treated without a single death. The authors found that the percentage of those showing little or no response was a little higher in the older children.

These reports indicate that hyperimmune human serum is a safe and effective method of producing passive immunity in non-immune children exposed to whooping cough, and that a large majority can be prevented from contracting the disease. With the use of this serum as a therapeutic measure it is possible to modify the course of the disease, and to lower the mortality rate in young infants appreciably.

The National Institute of Health has

7. McGuinness, A. C., Bradford, W. L., and Armstrong, J. G.: The Production and Use of Hyperimmune Human Whooping Cough Serum, J. Pediat. 16:21-29 (Jan.) 1940.
8. Scheinblum, I. E., and Bullowa, J. G. M.: The Treatment of Pertussis with Lyophile Hyperimmune Human Pertussis Serum, J. Pediat. 25:49-55 (July) 1944.
9. McGuinness, A. C., Armstrong, J. G., and Felton, H. M.: Hyperimmune Whooping Cough Serum; Further Studies, J. Pediat. 24:249-258 (Mar.) 1944.

authorized the preparation and distribution of hyperimmune human pertussis serum, and it is now available at various centers throughout the country. The Philadelphia Serum Exchange at the Children's Hospital of the University of Pennsylvania, 1740 Bainbridge Street, Philadelphia, is a non-profit human serum center, where vacuum-dried (lyophile) hyperimmune human pertussis serum is prepared and is available to every physician. This vacuum-dried serum is effective for at least five years, and can be stored in the doctor's refrigerator for immediate use when necessary.

For the *prevention* of whooping cough in non-immune children who have been exposed to the disease the dose depends on the degree of exposure and the amount of time that has elapsed since exposure. It is customary to give two intramuscular injections of 20 cc. each, regardless of age. If the exposure was casual and the first dose of serum is administered within forty-eight hours, an interval of five days between injections is recommended. If the first injection is given more than two days after the initial exposure, however, or if the exposure is continuous, the second injection should be given in three days.

For the *treatment* of pertussis the minimum dose of serum is 60 cc. administered in three intramuscular injections of 20 cc. each at forty-eight hour intervals. For critically ill patients, 200 cc. of serum may be required; this may be given intravenously in doses of 60 to 100 cc.

Recently the Cutter Laboratories of Berkeley, California, have introduced "Hypertussis," a highly concentrated and purified globulin fraction from the serum of hyperimmunized human donors. In this product 25 cc. of hyperimmune human pertussis serum is concentrated to 2.5 cc. of the globulin fraction, which can be given by ordinary hypodermic injection. The amount of serum given in one injection is reduced from 20 cc. to 2.5 cc. and consequently there is less tissue distention and pain. Lapin[5] has used this concentrate, with results comparable to those obtained with hyperimmune human pertussis serum.

There are various types of rabbit serum on the market at the present time—antitoxic, antibacterial, and combinations of the two—which have proven of value in both prevention and treatment of pertussis. Nevertheless, most authors feel that, because of the potential danger of sensitivity to animal protein, it is inadvisable to give animal serum to infants and children when human serum is available which can be given without fear of severe local or general reactions.

Bradford and Day[10] recently reported encouraging results with the use of streptomycin in mice. Their experiments suggested that streptomycin therapy increases the natural resistance to pertussis. In the same series of experiments penicillin was found to be without therapeutic promise in pertussis. Streptomycin is now being given a clinical trial in the treatment of pertussis at the University of Rochester, but no results have as yet been published.

Conclusions

Adequate active immunization of all infants and young children against pertussis is the ultimate aim, but at present the state is far from reaching this goal. Therefore, there is need for a quick, effective means of producing passive immunity.

Hyperimmune human pertussis serum provides a quick, safe, and effective means of producing passive immunity. If its use is adopted as a routine procedure by all physicians, the incidence of the disease and the mortality from it can be greatly reduced.

Discussion

Dr. William Eugene Keiter (Kinston): Dr. Ewers should be complimented on selecting such an important topic and handling it so well.

I have used the serum therapy for five or six years and have been very much pleased with the results. Of course, the essential point is to immunize children at the proper time, but serum will always be needed for those who haven't reached the proper age for immunization.

The interesting thing about the use of serum is the immediate and striking response in desperately sick children. We expect response in twelve hours—sometimes sooner.

The child may begin to get worse again within four to seven days, and it may be necessary to repeat the injection in a week or so. Sometimes we have given as many as three doses at five to seven-day intervals, with immediate response each time.

As with all such specific therapy, general treatment should not be neglected. In this climate, I think the patient should have a reasonable amount of fresh air. In the winter time we open all the windows we can, and find that the children have fewer paroxysms. Their nutrition of course, should be kept up, including vitamins and iron if possible. Sometimes transfusion is necessary to combat anemia. If pneumonia develops, the sulfonamide drugs are helpful.

10. Bradford, W. L. and Day, E.: Therapeutic Effect of Streptomycin in Experimental Murine Pertussis. Proc. Soc. Exper. Biol. & Med. 60:324 (Dec.) 1945; cited editorially in J.A.M.A. 130:859 (Mar. 30) 1946.

Dr. Connell Garrenton (Bethel): I would like to ask Dr. Ewers something about the cost and method of procuring this hyperimmune serum.

Dr. Ewers: The hyperimmune serum can be obtained from the University of Pennsylvania in Philadelphia. The price at the present time runs about $7.40 for one dose of 20 cc. The Hypertussis which is put out by Cutter can be obtained from any surgical supply house which handles Cutter products, and its price is around $10.

SYMPTOMATIC RELIEF OF THE ALLERGIC REACTION WITH THE ANTI-HISTAMINE DRUG, BENADRYL

L. C. TODD, M.D.
CHARLOTTE

Recently, attention is being directed to the use of histamine-neutralizing agents in the treatment of allergic conditions. According to Lewis' theory[1], the acute allergic reaction is produced when the H-substance or histamine is liberated by the combination of antigen and antibody. While there are several objections to this theory, it remains as acceptable as any, and, as time goes on, the primary premise of the theory seems to be strengthened.

The chief characteristics of the allergic or anaphylactic reaction are smooth-muscle spasm and increased capillary permeability. The typical urticarial wheal is a manifestation of increased capillary permeability and extravasation of plasma into the tissues, while bronchospasm in the human being and anaphylactic shock in the guinea pig are manifestations of smooth-muscle spasm. Since urticaria is a visible evidence of hypersensitivity, and since its course can be easily followed, this clinical condition is of especial value in estimating the degree of symptomatic relief afforded by the various histamine-neutralizing agents.

Drugs Previously Employed in the Treatment of Allergy

Among the histamine antagonists which have been studied are epinephrine, atropine, and two potent anti-histamine drugs discovered by Bonet and Staubbin in 1937[2]. Epinephrine and atropine were found to have side-effects more important than their histamine-inhibiting action. The clinical usefulness of the other two drugs was minimized by their toxicity.

Ethylene disulfonate is not an anti-histamine substance, but it has been tried in allergic conditions on the basis of its theoretical action "in correcting the tissue defect by which a person is permitted to become allergic in the first place."[3] Several well-qualified workers have given this substance a clinical trial and have come to the opinion that it is no more effective than other forms of non-specific therapy. Archibald[4] for one "found no justification for the use of ethylene disulfonate in the treatment of children's allergies." Fisk, Small, and Foord[5] concluded that this agent did not afford a significant degree of protection against anaphylactic shock.

The use of a hapten such as the combination of histamine and horse serum (hapamine[6]) has been tried, in the hope that it would render the individual resistant to histamine and thus control the allergic reaction. My experience with this hapten was distinctly disappointing. After a number of urticarial patients fully but unsuccessfully treated with hapamine were promptly and completely relieved by one of the histamine-neutralizing drugs, I discontinued the use of this agent.

In 1929 and 1930, histaminase[7] seemed to offer a possibility of neutralizing the toxic action of histamine, but we are all familiar with the disappointments of the histaminase era. More recently, other anti-histamine drugs which have the property of neutralizing histamine *in vitro* and of protecting sensitized animals against anaphylactic shock have been described.

Benadryl

One of these substances which has received wide publicity and about which encouraging clinical reports are being offered is Benadryl or betadimethylaminoethyl benzhydryl ether hydrochloride. The use of this

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1. Lewis, Thomas: The Blood Vessels of the Human Skin and Their Responses, London, Shaw & Sons Ltd., 1927.
2. McElin, T. W. and others: Symposium on Benadryl, Proc. Staff Meet., Mayo Clinic 20:417-445 (Nov. 14) 1945.
3. Shannon, W. R.: The More Recent Approaches to Allergy, Minnesota Med. 28:993-998 (Dec.) 1945.
4. Archibald, H. C.: Ethylene Disulphonate and Sterile Distilled Controls in the Treatment of Children's Allergies, Arch. Pediat. 62:219-222 (May) 1945.
5. Fisk, R. T., Small, W. S. and Foord, A. G.: The Experimental Use of Ethylene Disulfonate in the Prevention of Anaphylaxis in Guinea Pigs, J. Allergy 15:14-17 (Jan.) 1944.
6. Sheldon, J. M., Fell, N., Johnston, J. H. and Howes, H. A.: A Clinical Study of Histamine Azoprotein in Allergic Disease, J. Allergy 13:18-30 (Nov.) 1941.
7. (a) Best, C. H.: The Disappearance of Histamine from Autolysing Lung Tissue, J. Physiol. 67:256-263 (June) 1929.
   (b) Best, C. H. and McHenry, E. W.: The Inactivation of Histamine, J. Physiol. 70:349-372 (Dec.) 1930.

drug in experimental animals was first reported by Loew and his associates[8] in 1945, and the first clinical report, on its use in the treatment of urticaria, was made shortly thereafter by Curtis and Owens[9]. I reported on the same subject in October, 1945[10], and since then several reports on the use of Benadryl in various allergic conditions have appeared in the literature.

Characteristics[8]

In the alleviation of histamine shock in guinea pigs, Benadryl has been found to be 15 to 30 times more active than aminophylline. *In vitro* experiments with Benadryl and papaverine have shown that Benadryl is 650 times as active as papaverine in controlling the contractile response of guinea pig smooth muscle to histamine, 50 times as active against acetylcholine, and 1.3 times as active against barium chloride.

Side-effects

While Benadryl used clinically has caused drowsiness, dizziness, dry mouth, and nervousness in a considerable percentage of patients, the toxicity is very low, and blood counts, urinalyses, and blood chemistry determinations have demonstrated no untoward effects even in patients using the drug for as long as six months. Histopathologic studies on dogs have shown no evidence of acute or chronic changes in the viscera following prolonged ingestion of the drug.

Dosage

The effective dosage varies widely in different individuals and in different clinical conditions. At the Mayo Clinic[2], the oral dose for adults ranged from 50 to 500 mg. daily, and the intramuscular dose was 20 mg. For intravenous drip 10 to 120 mg. of Benadryl was given in a ten-minute period, with an average of 60 mg. per 100 cc. of normal saline solution. For children up to the age of 14, the oral dose of 2 mg. per pound of body weight was suggested.

In the acute allergic manifestations I have been impressed with the relatively small doses of Benadryl necessary to obtain a full therapeutic effect, and with the much smaller doses required for maintenance after the first one to three days of treatment. In chronic cases much larger doses are required. I usually begin treatment with 20 to 40 mg. intravenously or intramuscularly, plus 200 mg. daily by mouth. The injections are discontinued as soon as substantial relief is obtained, and the oral dose is reduced to 50 mg. daily or every second day as soon as complete relief is experienced. Small oral maintenance doses either in capsules or in the elixir are continued when they are deemed necessary. The elixir contains 10 mg. per 4 cc., and is especially valuable in treating children.

Clinical results

I have used Benadryl in more than 200 cases, and have given it an adequate clinical trial in 188; the other patients are still under observation or have not yet returned for a check-up. The results in 188 cases are presented in table 1. I have purposely selected those cases for treatment which theoretically should respond best to histamine neutralization.

Benadryl is almost universally successful in the symptomatic relief of the acute allergic manifestations such as urticaria and vasomotor rhinitis. It does not, of course, remove the underlying cause. In the chronic cases symptoms recur promptly when the drug is discontinued, but usually disappear again with equal promptness after resumption of the drug.

After a study of 362 cases which included Sluder's syndrome, histaminic cephalgia, myalgia of the head, vasomotor rhinitis, hyperplastic sinusitis, and Meniere's syndrome, Williams[11] has concluded that all these conditions are closely related and are due to the same fundamental physiologic mechanism—namely, physical or intrinsic allergy. He groups them all together under the designation "allergy of the head." Benadryl was found to be effective in this syndrome, especially in cases in which the vasomotor rhinitis component was predominant.

In patients exhibiting a generalized non-

8. (a) Loew, E. R., Kaiser, M. E., and Moore, V.: Synthetic Benzhydryl Alkamine Ethers Effective in Preventing Fatal Experimental Asthma in Guinea Pigs Exposed to Atomized Histamine, J. Pharmacol. and Exper. Therap. 83:120-129 (Feb.) 1945.
   (b) Loew, E. R. and Kaiser, M. E.: Alleviation of Anaphylactic Shock in Guinea Pigs with Synthetic Benzhydryl Alkamine Ethers, Proc. Soc. Exper. Biol. & Med. 58:235-237 (Mar.) 1945.
9. Curtis, A. C., and Owens, B. B.: Beta-Dimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl) in Treatment of Acute and Chronic Urticaria, Univ. Hosp. Bull., Ann Arbor, 11:25-26 (April) 1945.
10. Todd, L. C.: Urticaria, With Observations on the Use of the New Anti-Histamine Drug, Benadryl, South. Med. & Surg. 108:1-3 (Jan.) 1946.
11. Williams, H. L.: The Syndrome of Physical or Intrinsic Allergy of the Head. III. Vasomotor Rhinitis and the Vasodilating Pain Syndrome, Proc. Staff Meet., Mayo Clinic 21:58-64 (Feb. 6) 1946.

Table 1

Results of Benadryl Administration in 188 Patients

	No. Patients	*Complete Relief*	*Partial Relief*	*No Relief*
Chief Complaint Related to:				
I Skin	**98**	**89**	**6**	**3**
A. Urticaria and Edema				
1. Acute to subacute	13	13		
2. Chronic, recurrent	43	42	1	
3. Whealing reactions from:	25			
a. Penicillin		10		
b. Sulfonamides		4		
c. Insecticides		3		
d. Liver extract		2		
e. Horse serum (Antitetanic)		1		
f. Aspirin		2		
g. Prostigmine		1		
h. Skin testing		2		
B. Eczematoid Dermatitis, generalized	12	6	4	2
C. Contact Dermatitis	5	3	1	1
II Respiratory Tract	**73**	**50**	**18**	**5**
A. Rhinitis, perennial (Vasomotor)	35	31	4	
B. Rhinitis, seasonal (Pollen)	11	11		
C. Vasomotor Laryngitis	3	2	1	
D. Asthma with Rhinitis	6	2	3	1
E. Asthma alone	18	4	10	4
III Gastro-Intestinal Tract Food allergies with principal symptoms related to G-I tract	7	6	1	
IV Central Nervous System	**10**	**5**		**5**
A. Migraine	8	3		5
B. Meniere's syndrome	2	2		

specific irritability of the skin which is subclinical but becomes manifest when routine skin tests are attempted, Benadryl lowers the diffuse histamine concentration of the tissues so that subsequent skin tests are more clear-cut and specific in their significance. Among the other uses of Benadryl in allergic practice are: (1) in relieving the symptoms of urticaria or rhinitis for a few weeks after the fundamental etiology is determined, until specific desensitization becomes effective; (2) in controlling the distressing symptoms which occasionally occur after skin-testing when a number of positive reactions have been obtained and an excessive amount of histamine appears to be liberated; and (3) in controlling promptly the many acute but transient allergic manifestations seen in daily practice—among them, urticaria following liver injections, penicillin or sulfonamides, urticaria and angioneurotic edema or serum sickness, and the great majority of allergic (antigen-antibody whealing) and non-allergic whealing reactions. It acts much more promptly than does adrenalin and has fewer side effects; less treatment is required, and the effects of medication are more persistent.

The hope that Benadryl might be of equal value in the more chronic allergic conditions such as asthma, chronic eczematoid dermatitis, and chronic rhinitis with polypoid degeneration have not been fulfilled. While partial relief is obtained in a considerable percentage of such cases, and a few patients have obtained striking relief, there are more who receive no demonstrable benefit. In these chronic conditions, the tissue changes may have reached an irreversible stage.

Conclusion

While some of the histamine-neutralizing drugs in production and under clinical investigation are undoubtedly of great value, the belief expressed in some quarters that a universal treatment for allergy is imminent is not yet justified. From past experience with the indiscriminate use of torantil, however, we can expect that when these histamine-neutralizing agents of greater potency become generally available, they will be widely used in all types of disorders, allergic and otherwise. It is well for the allergist to be prepared to evaluate properly the uses and limitations of these drugs.

The new agent, Benadryl, will be of inestimable value in controlling the acute allergic phenomena, some of which have always been difficult to manage. It also gives the allergist an opportunity to search for the fundamental allergic factors, in the hope of securing lasting results.

Discussion

Dr. T. W. Baker (Charlotte): My discussion of Dr. Todd's excellent paper might be termed, "The Guinea Pig Testifies," for I am included among the cases he reported. I recall reading a paper before this section several years ago during the throes of an acute attack of hay fever, but thanks to Benadryl, I am fortified against such an attack today. Curiously enough, that paper dealt with physical allergy as related to histamine sensitivity.

It has long been the opinion of several investigators that the common denominator of the allergic diseases and of some of the diseases not yet classified as primarily allergic is increased capillary permeability with edema, provoked by the local release of histamine or of a histamine-like substance. This edema is recognized in the mucous membranes as hay fever or vasomotor rhinitis. Localized edema manifests itself clinically in the skin as urticaria or angioneurotic edema, and probably in the labyrinth as Meniere's syndrome. With this concept of a common etiologic factor for the groups of allergic diseases characterized primarily by increased capillary

permeability and extravasation of tissue fluid, treatment with an anti-histamine substance becomes physiologically sound. As Dr. Todd has shown us, Benadryl is much more effective in urticaria and vasomotor rhinitis, which are characterized by increased capillary permeability with local edema, than it is in asthma and related disorders, which are characterized principally by smooth muscle spasm.

The search for a potent anti-histamine drug has been long and tedious. Numerous products have been offered but have been largely discarded either because of ineffectiveness or because of disagreeable side effects. Benadryl is not a panacea, as it does not eliminate the primary factor in the given allergic disorder. However, it does represent a very definite advance in the symptomatic treatment of allergic states. Its discovery will very likely initiate research leading toward the development of even more effective related compounds with less disagreeable side effects, in much the same way that the discovery of sulfanilamide led to more effective and less toxic sulfonamides.

One word of caution in closing. Benadryl is still a new drug, although it has now been released to the drug trade. Competent investigators report a minimum of severe reactions. However, the body of data is as yet insufficient to warrant its indiscriminate use, for it is quite possible that we may learn of slowly developing but serious reactions following its prolonged use.

Dr. Todd is to be heartily congratulated upon such an excellent presentation and upon his selection as one of the clinical investigators in this field.

Dr. Todd: In treating large numbers of people with any new drug we are bound sometimes to run into some individuals who cannot tolerate it. So far in our experience even those patients who have used the drug six or eight months and have been observed carefully for a period of a year have showed no ill effects whatsoever. But the possibility that a depression of the hematopoietic system might be caused in some patient some day is one argument against the lavish, injudicial use of Benadryl for any and everything.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

ANN ARBOR, MICHIGAN

THE STORY OF YELLOW FEVER

VII

WALTER REED (1851-1902)

Many men have gone from log cabins to the presidency of the United States, but few have progressed from a cabin (fig. 1) to international scientific fame, as did Walter Reed. Though he was born in Virginia (September 13, 1851), both of his parents were North Carolinians, his father being a Methodist preacher. He completed his medical course at the University of Virginia in nine months at the age of 18 years—the youngest medical student ever graduated there. He received his M.D. degree at the Bellevue Hospital Medical College a year later. After an internship at the King's County Hospital, Brooklyn, he was appointed an inspector of the Brooklyn Board of Health, and also engaged in private practice. Four years later he entered the Army Medical Corps, intending to remain only three or four years.

After thirteen years in the wilds of Arizona and Nebraska, Reed applied for a transfer to Baltimore with permission to study pathology and bacteriology at the new Johns Hopkins Hospital. The scientific interest which Reed developed while working with William Welch was soon recognized by the army with his appointment as chairman

Fig. 1. The cabin in Gloucester County, Virginia, which was Walter Reed's birthplace on the thirteenth of September, 1851.

of a committee to study the causation and modes of propagation of typhoid fever during the Spanish-American War in 1898.

In 1899, when the work of the Typhoid Commission was completed, Walter Reed and James Carroll were appointed by Surgeon General Sternberg to investigate Bacillus icteroides, which Sanarelli claimed was the cause of yellow fever, and Bacillus X, which Sternberg had isolated from fatal cases of the disease. They soon proved that B. icteroides belonged to the hog cholera group.

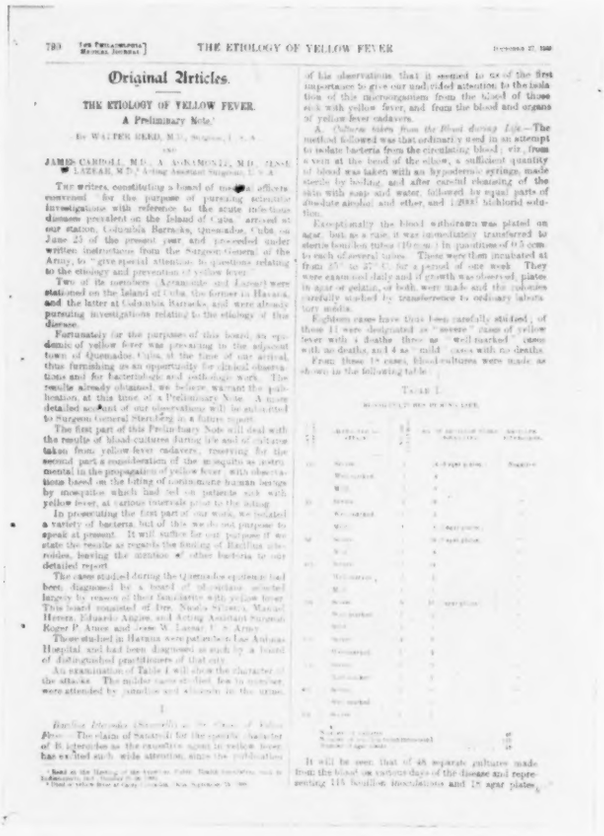
In 1900, yellow fever appeared in Cuba,

and the army appointed a commission composed of James Carroll, Jesse W. Lazear, and Aristides Agramonte, with Walter Reed as chairman, to investigate the disease. After observing an outbreak at Pinar del Rio, they conjectured that some insect was capable of carrying the infection — possibly the mosquito, as Carlos J. Finlay had suggested. Reed therefore adjourned the search for the causative agent of yellow fever, and studied the ways by which the disease was propagated.

The experiments were begun by Lazear, who applied a number of infected mosquitoes (Aedes aegypti), hatched from eggs furnished by Finlay, to several volunteers, including himself and Carroll. On August 31, 1900, four days after being bitten, Carroll developed yellow fever. Lazear was fatally infected by a mosquito a month later. In its first publication (fig. 2) the commission reported: "The mosquito acts as the intermediate host for the parasite of yellow fever."[1] The commission next proved that clothing or other fomites could not spread the disease[2].

On December 31, 1900, Reed was able to write, "it has been permitted to me and my assistants to lift the impenetrable veil that has surrounded the causation of this most wonderful, dreadful pest of humanity and to put it on a rational and scientific basis." The commission had "converted a discredited hypothesis into an established doctrine."

These results made the eradication of yellow fever possible by mosquito control, permitted General Leonard Wood to make Havana one of the healthiest cities in the world, and enabled Gen. George W. Goethals to build the Panama Canal. But the commission went further and laid the foundation for the yellow fever vaccine so successfully used in World War II, by demonstrating that although no organisms could be found in a patient's blood, the inoculation of whole blood or of Berkefeld-filtered serum from victims of yellow fever into volunteers would reproduce the disease—the second demonstration of an ultra-microscopic virus[3]. The son of one of these volunteers, W. N. Jernigan, was a patient in Duke Hospital in 1933, and gave an interesting account of



Original Articles.

THE ETIOLOGY OF YELLOW FEVER.

A Preliminary Note.

Fig. 2. The title-page of the first publication of the Reed Yellow Fever Commission, in the Philadelphia Medical Journal, October 27, 1900. (From the editor's collection)

these experiments, which he had heard from his father.

Reed left Cuba in 1901 to become Professor of Bacteriology at the Army Medical School and also at Columbian University. However, his brilliant career was cut short by death from appendicitis on November 22, 1902. Reed's monument in Arlington carries the inscription, "He gave to man control over that dreadful scourge, Yellow Fever." During his lifetime, Harvard and Michigan honored him with degrees, and since his death medical men throughout the world have recognized his place among the immortals. The chief Army Hospital, the contagious ward at Duke Hospital, and innumerable other memorials have been named for him.

WILBURT C. DAVISON, M.D.
Dean, School of Medicine,
Duke University.

1. The Etiology of Yellow Fever: A Preliminary Note, Philadelphia M. J. 6:790-796 (Oct. 27) 1900.
2. The Etiology of Yellow Fever: An Additional Note, J.A.M.A. 37:431-440 (Feb. 16) 1901.
3. The Etiology of Yellow Fever: A Supplemental Note, Am. Med. 3:301-305 (Feb. 22) 1902.

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JULY, 1946

CULTURAL EROSION IN AMERICA

One of the most thought-provoking articles that has appeared in many a day is to be found in the *Journal of Heredity* for March, 1946, under the intriguing title, "Genic and Cultural Erosion in America." Its author, Mr. R. C. Cook, presents in a forceful and graphic manner some facts which intelligent people know vaguely, but prefer not to think about seriously—facts which must be faced sooner or later, however, lest our present civilization be terminated as effectively, if not as quickly, as by a barrage of atomic bombs.

These facts deal with the birth trends in this country for the past twenty-five years or longer. These trends have been steadily increasing the intellectually inferior portion of our population at the expense of the intellectually superior. It is generally known that the birth rate is much lower among high school and college graduates than among the relatively uneducated classes. Until the past few decades, the higher death rates among the lower classes largely offset their higher birth rate. Now, however, the death rate is nearly the same at all levels of society. Mr. Cook says that "If birthrates and deathrates remain at present levels, the great-granddaughters of the women who did not graduate from grade school will outnumber the granddaughters of the other two groups (high school and college graduates) *two to one.*"

Laying aside all sentiment over the wonderful possibilities inherent in the common man, we should face the fact that "the transmission of a culture-complex from one generation to the next demands that those who are to perpetuate it be immersed in the best of a culture." If birth rates continue to go down as education goes up, what is to prevent America from entering upon a new Dark Age?

Mr. Cook suggests that much can be done to remedy the situation if we "get our heads out of the sand and really look straight at the handwriting on the wall." Two remedies would seem to be obvious: (1) to educate our educated people to the necessity of reproducing their kind, and (2) to do the poor and ignorant the favor of teaching them birth control. North Carolinians may justly take pride in the fact that their state was the first in the union to establish birth control clinics under the supervision of the State Board of Health. To Dr. George M. Cooper goes the credit for having the wisdom to see the need of these clinics and the courage to brave captious criticism in establishing them.

The medical profession is rightly expected to lead movements to improve the human race. Let us face the facts set so clearly before us by Mr. Cook, and begin our private campaigns to persuade our privileged patients to be more fruitful, at the same time teaching the underprivileged to refrain from bringing more children into the world than they can properly care for. As Mr. Cook concluded, "If we can't dismiss differential birth rates as being utter moonshine, then they become next to the atomic bomb the most urgent problem of our time. If the genic trends are against us, then the New Dark Age is inevitable. The only important question is when will it begin? Or has it?"

THE A.M.A.'S NINETY-FIFTH ANNUAL SESSION

The American Medical Association held its ninety-fifth annual session at San Francisco, July 1-5. Nearly eight thousand doctors attended. At least twenty-three doctors were registered from North Carolina.

As the NORTH CAROLINA MEDICAL JOURNAL is just ready to go to press, there is time and space for only a few of the highlights of the meeting. More will probably be said about it next month.

The selection of Olin West as president-elect met with general approbation. He probably has more friends among the doctors of America than any other living man, and it is a fitting tribute that his work for organized medicine should be crowned by a year as the official head of the American Medical Association. Dr. Edward L. Bortz of Philadelphia was made vice president. The other officers of the association whose terms expired were re-elected without opposition, except the speaker of the House of Delegates. The California delegation made a strenuous effort to elect Dr. Lowell S. Goin, a radiologist of Los Angeles, but Dr. Roy W. Fouts of Omaha, Nebraska—another radiologist—was re-elected by a respectable majority.

North Carolina, with 2020 members, gained an additional delegate in the re-apportionment that is made every three years, so that until 1949, at least, our Society is to have three delegates.

The programs of the Scientific Assembly and the Scientific Exhibits were well up to standard. The Section on General Practice was no longer on probation, but for the first time was adopted as a regular section of the Scientific Assembly. Although it was isolated from the rest of the sections, and was inadvertently omitted from the list of meeting places given in the "Daily Bulletin," the attendance was gratifyingly large.

The California medical men were excellent hosts, and deserve great credit for the efficient and hospitable reception given the thousands of visitors. The climate of California was at its best, and more could not be said of it. The 1946 meeting of the American Medical Association will go down as one of the best sessions yet held.

* * * *

"SPECIALIZATION MUST SLOW UP"

The following editorial from the *Bulletin* of the Genesee County (Michigan) Medical Society for March 26 is so timely that it is reproduced in full:

There are two regrettable results facing the medical profession if we persist in de-emphasizing general practice. Either we will provide the ammunition for the politicians who are screaming about the unequal distribution of medical care in rural areas and shackle ourselves with socialized medicine; or if we manage to withstand the politician we will lose to the osteopaths who are already taking over many of the smaller communities by default.

The trend in this direction probably began about the turn of the century when medicine itself began taking on new stature and rapidly adding a wealth of new information, new techniques, and even new fields of practice. Specialization became necessary just as in the evolution of the automobile industry where today one man may know only how to make a crankshaft and nothing more about the operations of manufacturing an automobile.

One may simply ask: Have we gone too far?

It is significant that many of our older specialists "drifted" into a specialty from general practice. The younger specialists of today are products of a rigid production schedule for the most part, by-passing any emphasis on general practice. Actually, we have fostered the trend by our own methods. My alma mater, for instance, has no place on its staff for a general practitioner. There are no residencies specializing in general practice. In fact, residents are taught rigid segregation of medical cases into specialty fields and a specialists "code" requiring them to stay within their own field. The old joke about specializing in disease of the right eye only has some counterpart in fact.

From the standpoint of the individual, several factors influence his career. Early in school he grasps the way medicine is organized in a teaching center and obviously concludes that general practice is merely a clearing station for specialists. No effort is made to present any other conclusion! Furthermore, he can see the advantage of more regular working hours, probably a bigger income, and social and educational advantages of a larger community where he is likely to locate. By the simple psychological manipulation of sublimation he projects himself into the place of medical prominence enjoyed by his professor and decides "That's for me."

Medical schools should recognize as their first duty the education of doctors for general practice. The training of specialists should be a secondary

function. Somehow, the individual must be shown that the front line of medical practice performs a service to humanity second to none. He should be taught self-reliance in all fields of practice rather than the ability to segregate patients for specialists.

Probably the best way to teach an individual about general practice is by experience. The best way to alter medical curricula is to convince the educators every student is to be a general practitioner first of all. If our teaching centers would all require graduate students to have engaged in general practice for three years before they are eligible for a residency the pendulum would swing into place almost over night. We would then have more general practitioners for rural areas by mandate of the profession and undoubtedly more would stay by choice. In one single stroke we could silence the biggest gun of the politician and stop the inroads of the osteopath. At the same time we would probably develop better basically qualified specialists for the future.

J. E. Livesay, M.D.

* * * *

WANTED — A DOCTOR

The need of doctors for our small towns and rural communities is one of the most pressing problems that the medical profession has to face. The term "medical profession" is used advisedly, for it is unlikely that any political panacea will ever be discovered that will solve this or any other problem of medical care.

A letter recently received in this office is a poignant reminder of the plight of many small communities in the state. Let us hope that a goodly number of our recent graduates, when they are released from service, may decide to cast their lot in such communities as Oakboro.

The letter in question is published in full in the hope that it may catch the eye of someone who is interested in such a location, or who knows of a doctor who might become interested.

Dear Dr. Johnson:

We need a doctor in our town and I am writing you with the hopes that you will be able to send us one out here.

We are totally without medical service, the nearest doctor is about fifteen miles away, therefore, as you see we are in a critical condition.

Our doctor left here on account of his failing health, and left his practice wide open.

We have a trading community of five to seven thousands, mostly home owners and able to pay cash. We are located about twelve miles from two good hospitals. I believe if you could have a doctor drive out here and look this territory over, he would have no trouble in deciding that this is a good location for a doctor.

If you can possibly help us we will certainly appreciate it very much.

Very truly yours,

Barger Drug Store,

C. N. Barger, Druggist.

DR. LLOYD THOMPSON RETURNS TO NORTH CAROLINA

It is with a great deal of pleasure that the medical profession of North Carolina learns that Dr. Lloyd J. Thompson is returning to this state as a permanent citizen, in the capacity of professor of neuropsychiatry at the Bowman Gray School of Medicine of Wake Forest College. Dr. Thompson is known personally to many North Carolina doctors, and is remembered by all as the director of the comprehensive survey of the state's mental hygiene facilities made by the Hanes Commission in 1936. The monumental report of this commission was unfortunately pigeon-holed as a result of the change of administration in 1937, but it was resurrected in 1942 by the board which Governor Broughton appointed to investigate the State Hospital at Morganton. This board depended largely upon the work done by Dr. Thompson for its information, and based its recommendations upon those made in his report.

After leaving North Carolina ten years ago, Dr. Thompson returned to Connecticut, where he was associate clinical professor of psychiatry and mental hygiene at Yale University, attending psychiatrist at the New Haven Hospital, and director of psychiatric service in the community of New Haven. From 1942 to 1946 he served in the medical corps of the army, first as senior consultant in neuropsychiatry in the European Theater of Operations, and later as consultant in neuropsychiatry, First Service Command. He was awarded the Legion of Merit by this country and the Medaille d'Honneur by France.

Dr. Thompson's magnetic personality, his cordial manner, and his great ability served to keep his memory fresh in the minds of those doctors and laymen who learned to know him during his sojourn in our state. His many old friends and his still more numerous potential new friends in North Carolina look forward to a long association with him. The Bowman Gray School of Medicine is to be congratulated on having secured him to direct its department of neuropsychiatry.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

A 45-year-old housewife, the mother of four children, was first seen in the emergency room of the North Carolina Baptist Hospital at 12:30 p.m. on January 13, 1946, complaining of intermittent abdominal pain and vaginal bleeding of about three hours' duration.

The patient stated that to the best of her knowledge her last menstrual period occurred some time in June, 1945. Fetal movement was felt in November, 1945. Except for some swelling of the ankles for a few weeks she had considered her pregnancy uneventful. She had not been under the care of a physician. About three weeks before admission she had what she termed the "flu"; she had had no other recent illnesses. Three hours prior to admission, while in the bathroom, she had a sudden, profuse vaginal hemorrhage and pain over the entire abdomen. The bleeding was enough to saturate three or four pads made of half bed-sheets. Slight bleeding continued, with recurrent episodes of pain, from that time until admission.

The *past history* was irrelevant.

On *physical examination* the temperature was found to be 98 F., the pulse 108, respiration 36, blood pressure 120 systolic, 90 diastolic.

The patient was a middle-aged woman, lying quietly in bed and holding her abdomen. The skin and mucous membranes were pale in appearance. Examination of eyegrounds revealed normal retina with full vessels, but no edema of the optic discs and no retinal hemorrhages.

The chest was clear to auscultation. The heart was normal in size and regular in rhythm; no murmurs were heard.

The abdomen was enlarged by a gravid uterus which rose four fingers' breadth above the umbilicus. The enlargement was more prominent on the right. The uterus was firm and cystic, with little or no relaxation. Tenderness was general in distribution but most prominent at the left upper portion of the fundus. A fetal heart could not be heard, and no fetal parts could be palpated. The lower extremities showed slight edema. No other abnormalities were noted.

Accessory clinical findings: A catheterized specimen of urine was cloudy and yellow, with a specific gravity of 1.017, a *p*H of 5.5, and a negative reaction for albumin and sugar; on microscopic examination 2 to 4 white blood cells and 1 to 3 red blood cells were seen per high power field. A blood count showed 11.5 Gm. of hemoglobin, 4,320,000 red blood cells, a hematocrit of 28 volumes per cent, and 22,000 white blood cells.

Course in the hospital. The patient's blood was typed and cross-matched. In the delivery room, a sterile vaginal examination was carried out. The cervix was dilated 2 cm. and was 3 cm. in length. No placenta was felt. The membranes were intact and the breech was presenting. The membranes were ruptured, and the patient was returned to the labor room, where 500 cc. of whole blood and 300 cc. of saline were given intravenously without elevation of temperature, chills, or increase in pulse rate. Throughout the afternoon, her blood pressure ranged from 140 to 160 systolic, 100 to 110 diastolic. The respiratory rate remained between 30 and 40, the pulse rate between 78 and 84. She had been catheterized on the delivery table at 2 p.m. This was the only urine which she had excreted since 6:30 a.m. At 8 p.m. catheterization yielded only 5 cc. of urine, which was grossly clear and yellow, and gave a 2 plus reaction for albumin; it was acid in reaction. Six hundred cubic centimeters of sixth molar sodium lactate and 1000 cc. of 10 per cent glucose in water were administered. At 8:50 p.m. a stillborn baby was delivered spontaneously. The patient received ¼ grain of morphine sulfate and 1/320 grain of ergotrate. At that time she appeared tired and pale, but otherwise her condition seemed unchanged.

On January 14 at 12:30 a.m. another catheterization was carried out, and 5 cc. of urine was obtained. This gave a 2 plus reaction for albumin and contained many red blood cells. At this time her blood pressure was 125 systolic, 80 diastolic, the pulse 100, respiration 20. By 7 a.m. she had received since admission approximately 4000 cc. of fluid by mouth and by vein. Her total output during this time was 190 cc., of which 110 cc. was urine. Blood chemistry showed the nonprotein nitrogen to be 42 mg. per 100 cc., the carbon dioxide combining power 41 vol-

umes per cent, and the serum chlorides 532 mg. per 100 cc. During the day slight anasarca developed, but the eyegrounds continued to show no papilledema. Only 3 to 5 cc. of grossly bloody urine was obtained during the day. The cross match was re-checked and the blood used for transfusion was found to be compatible. The patient was Rh-positive. A medical consultant who saw the patient felt that the renal shut-down was due to a transfusion reaction.

On January 15 the nonprotein nitrogen was 48 mg. per 100 cc., the total serum proteins 5.5 Gm. per 100 cc., blood chlorides 480 mg. per 100 cc. The serum bilirubin was 0.8 mg. per 100 cc., the carbon dioxide combining power 37 volumes per cent. The hemoglobin was 8.5 Gm., the red blood cells 2,600,000, the hematocrit 20 volumes per cent. The patient was started on digitalis and theocin orally. The total output of urine in twenty-four hours was 7 cc.

A urologic consultation was secured. In an effort to relieve any spasm of blood vessels leading to the kidneys, 16 mg. of pontocaine in glucose was given intraspinally between the first and second lumbar vertebrae at 5 p.m. Anesthesia extending to the nipple line and lasting approximately three hours was secured without benefit. The urologic consultant advised decapsulating the kidneys. A second spinal anesthetic was given. The right kidney was exposed through a right flank incision, the capsule removed, and a biopsy specimen secured from the cortex of the kidney. The operation was completed at 9:00 p.m., and at 11:15 three or four drops of urine had appeared at the end of the indwelling catheter. During the next twenty-four hours, there was an output of 95 cc. of urine with an intake of 3500 cc. of glucose, molar lactate, and whole blood.

From January 17 until her death at 11:30 p.m. on January 25 the patient showed a progressive picture of renal failure. Her intake orally and parenterally varied from 1500 to 3000 cc. daily. The urinary output varied from 50 to 175 cc. The urine continued to show considerable albumin and blood, but no casts or crystals were seen. The nonprotein nitrogen rose steadily from 92 mg. per 100 cc. to a terminal figure of 185. The carbon dioxide combining power rose at first to 73 volumes per cent, and dropped on the day prior to death to 37 volumes per cent. The serum proteins remained high and reached 6.7 Gm. per 100 cc. on January 23. The chlorides varied between 416 and 476 mg. per 100 cc. A single creatinine determination on January 17 was 5.4 mg. per 100 cc. A urea clearance test on the same date showed less than 2 per cent of average normal function. The hemoglobin was maintained between 7 and 8 Gm.

The patient's physical condition was characterized by increasing drowsiness, muscular twitching, and edema. The temperature, pulse, respiration, and blood pressure remained fairly stable until two days prior to death, when evidence of pulmonary edema and bronchopneumonia developed. She became comatose twenty-four hours prior to death. The treatment consisted of a wide variety of supportive measures.

Discussion

DR. J. F. DONNELLY: Obstetric hemorrhage and urinary suppression constitute the two basic problems of this case. They may have been due to a single cause or to separate causes. A number of factors strongly suggest that the hemorrhage was due to a premature separation of the placenta. The age and parity of the patient, the duration of the pregnancy, the sudden vaginal bleeding associated with pain in the abdomen, the elevation of bood pressure (even though the patient was obviously shocked), and the tetanic contraction of the uterus favor this diagnosis.

In any case of obstetric hemorrhage it is essential to ascertain the exact cause as rapidly as possible. This can be determined with complete assurance only by a careful sterile vaginal examination done with blood available for transfusion and the operating room in readiness. In this case the findings on examination ruled out lesions of the lower genital tract and placenta praevia as causes for the hemorrhage, leaving only premature separation of the placenta and rupture of the uterus to be considered. The latter was unlikely, as none of the predisposing causes were present. There was but a single abdominal mass, and there was no evidence of intra-abdominal bleeding. I believe we can conclude, therefore, that the cause of hemorrhage in this case was premature separation of the placenta.

The management was conservative, as the bleeding was not severe on admission nor after the rupture of the membranes, and

the fetus was already dead. Because of her parity and the pathological entity present a short labor could be anticipated.

Renal suppression may be due to a variety of causes, of which three seem to be most probable here. These are: (1) dehydration and shock; (2) transfusion reaction; and (3) acute cortical necrosis of the kidney. The patient obviously had hemo-concentration and shock on admission, but this was quickly remedied without improvement in the urinary output. Shock does not produce albuminuria and hematuria.

A transfusion reaction was a distinct possibility, particularly in view of the fact that urine obtained prior to the transfusion gave an acid reaction. However, the absence of chills, fever, or increased pulse rate during the transfusion or following it makes this cause unlikely. The most important point was the absence of hematin crystals in the urine; none were ever found. Additional, although not absolute, evidence against a transfusion reaction was gained by the compatible cross match on re-check.

There were three outstanding characteristics of the renal lesion—oliguria, albuminuria, and hematuria. These are the characteristic urinary findings in acute bilateral cortical necrosis of the kidney. Supporting this diagnosis is the presence of hypertension with premature separation of the placenta—a condition in which bilateral cortical necrosis not infrequently occurs. Terminally, pulmonary edema and bronchopneumonia developed.

Cortical necrosis of the kidney is said to be a rare entity first recognized in 1886. Sixty per cent of the cases reported have been in pregnant women, and usually following such conditions as premature separation of the placenta, renal disease, and toxemia of pregnancy. The etiology is unknown. Necrosis of the renal tissue follows vasoparalysis, with stasis of the blood and extending thromboses in the vessels. The relatively high frequency of this disease in pregnant women may be associated with the abnormal vasomotor irritability of the pregnant state. The onset is insidious, and may or may not be preceded by signs or symptoms of toxemia of pregnancy or other renal disease. Edema may be present and convulsions may occur. Characteristic findings are suppression of the urine, frequently with complete anuria. When urine is present, it always contains albumin and red cells. The subsequent clinical course varies with the degree of damage to the kidney substance. A few recoveries have been reported. The majority of patients with the full-blown disease, however, have gone on to death and the diagnosis has been made on the autopsy table.

In a large obstetric practice one will see many patients with urinary suppression—although to a much less extent than in this particular case—who recover without event. I feel that these cases represent the same disease process, but without actual necrosis of the renal tissue, as the process does not continue long enough for thrombosis to occur. Treatment should be directed along three lines: (1) maintenance of the normal body chemistry insofar as possible, (2) attempts to cause diuresis, and (3) supportive measures.

Dr. Donnelly's Diagnoses

Acute bilateral cortical necrosis of the kidney.

Bronchopneumonia

DR. FRED GARVEY: I am very much interested in renal cortical necrosis, mainly because I stood helplessly by as a consultant on 3 previous cases, all of which came to autopsy. Every measure to promote diuresis other than decapsulation was used with no avail, and at no time was there any encouraging evidence of urinary secretion from the time the complete suppression began. In all 3 cases the urinary suppression began following retroplacental hemorrhage or abortion, and in none was there a previous history of renal disease or an immediate predisposing toxemia of pregnancy. Believing that a sudden bilateral shut-down of the kidneys without previous evidence of disease is probably on the basis of "angioneurotic anuria"[1] and is due to angiospasm of the terminal arteries of the kidney, I have felt that early decapsulation is probably the only chance for cure. Although the true effect of renal decapsulation on this condition is not thoroughly understood, the most plausible theory is that of Kummell, who claims that improvement in renal circulation results from destruction of the vasoconstrictor nerves[2]. It is Kummell's belief that irritation of these nerves is responsible for vasospasm.

1. Ash, J. E.: Bilateral Cortical Necrosis of the Kidneys, Am. J. M. Sc. 185:71-86 (Jan.) 1933.
2. Abeshouse, B. S.: Renal Decapsulation; A Review of the Literature and a Report of Ten Cases, J. Urol. 53:27-84 (Jan.) 1945.

Decapsulation presumably destroys the nerve connection between the capsule and the cortex at the hilum, and results in improved intrarenal circulation and renal secretion. Ash[2] collected 13 operative cases, 4 of which recovered following decapsulation, while 9 went on to autopsy. Biopsy of the kidney in the patients who recovered showed necrosis already developing. It is logical to think that if vasoparalysis with thrombosis has already begun, decapsulation is too late.

It is my belief that if decapsulation is done early enough, chances of cure would be good in a higher percentage of these cases. Because of dread of the major procedure of decapsulation, it is usually delayed until other therapeutic measures have failed and necrosis has already ensued. The increase in urinary output following decapsulation in this case was probably the result of a denervation of the nephrons which were not completely necrosed. The insufficiency of the remaining part of the kidney was overwhelming, however.

Anatomic Discussion

DR. W. C. THOMAS: The important lesions were found in the kidneys. The right kidney was partially decapsulated and the site of biopsy was noted. Both organs otherwise appeared identical. They weighed 175 Gm. each and were red-brown in color, with scattered petechial hemorrhages on the surfaces. Fine, yellow, linear radiating streaks were noted on the cut surfaces of the cortices. Microscopic examination revealed marked arteriolar necrosis. Many of the glomerular loops showed necrosis. An occasional completely necrotic glomerulus was seen. The proximal convoluted tubules were dilated and there was marked regenerative activity of the epithelium. Granular casts were present in many of the collecting tubules.

This case is particularly interesting in that we have a "pathologic progress note" in the form of a biopsy specimen taken from the kidney two days following the onset of the oliguria. This showed extensive necrosis of the epithelium of the proximal convoluted tubules, which were filled with granular debris. Scattered loops of the glomerular capillaries were dilated and filled with a pink granular material. Some necrotic loops were seen. The arterioles presented no histologic abnormalities.

I can only emphasize that the cause of bilateral cortical necrosis of the kidneys[3] will be understood only when we have thoroughly investigated the mechanism of oliguria in obstetrical, surgical, and medical patients. The end stage of the process, as represented by necrotic kidneys, is interesting to the morbid anatomist, but does not assist materially in understanding the process.

Anatomic Diagnoses

Bilateral cortical necrosis of the kidneys
Bronchopneumonia

3. (a) Duff, G. L. and More, R. H.: Bilateral Cortical Necrosis of the Kidneys, Am. J. M. Sc. 201:428-450 (March) 1941.
(b) Sheldon, Walter H. and Hertig, Arthur T.: Bilateral Cortical Necrosis of the Kidney, Arch. Path. 34:866-874 (Nov.) 1942.

CASE REPORT FROM THE TUMOR CLINIC

NORTH CAROLINA BAPTIST HOSPITAL

Case 17

Mrs. D. M., a 56-year-old housewife and the mother of seven children, entered this hospital for the second time complaining of severe, colicky pain in the right upper quadrant of the abdomen. Twelve years prior to the present admission, she had had a cholecystectomy in this hospital following a seventeen-year history of intermittent attacks of pain in the epigastrium, with radiation to the right shoulder blade, nausea and vomiting, acholic stools, and dark urine. The diagnosis at that time was chronic cholecystitis with cholelithiasis. Following this operation, she remained well until four months prior to the present admission, when she developed aching pain in the right upper quadrant, with radiation to the right shoulder. Her local physician treated her for this attack, which lasted about a week. She remained asymptomatic for about three months, at the end of which time her pain returned. This time there was associated anorexia, nausea, and vomiting, which became progressive. There were no chills or fever. Within ten days jaundice appeared, accompanied by pruritus, acholic stools, and dark urine. During this time, she was under the care of two different physicians. Her symptoms became progressively worse, and she was admitted to the medical service of this hospital for diagnosis and treatment.

The following significant *past history* was

obtained. Two years prior to the present admission, she was diagnosed as having diabetes mellitus and was placed on insulin therapy. She continued this for about a year and then stopped it of her own accord. At the age of 35, she was thought to have had an ulcer of the stomach, with tarry stools. The system review and the family and social histories did not appear to be related to the present illness.

On *physical examination*, the rectal temperature was 99 F., the pulse 95, respiration 20, and blood pressure 150 systolic, 90 diastolic. The patient was an obese, icteric, white female who looked about her stated age. She weighed 209 pounds and was 5 feet, 5 inches tall. She was restless and was scratching frequently, but appeared to be in no acute distress. Her skin, sclerae, and mucous membranes were deeply jaundiced. There were numerous, irregular purpuric discolorations and crusted excoriations over the surface of the body. The head, neck, heart, and lungs were not abnormal. The abdominal wall was thickened by an excessive amount of adipose tissue. Definite right upper quadrant pain was elicited on palpation, and there was muscular rigidity in this area. On inspiration, the liver edge could be felt about two fingers' breadth below the right costal margin. No other abdominal viscera or masses could be palpated, and on auscultation normal peristaltic sounds could be heard. Examination of the extremities and the neurologic survey were essentially negative. The pelvic and rectal examinations revealed nothing abnormal.

Accessory clinical findings were as follows: The urine was consistently dark amber in color, with specific gravities ranging from 1.012 to 1.022; it was acid in reaction, negative for sugar and albumin and negative microscopically, but contained large amounts of bilirubin and bile salts in the absence of urobilin. The hemoglobin was 15.5 Gm., the red cell count 4,720,000, and the white cell count 9,800, with a normal differential. The Kahn was negative, the nonprotein nitrogen 30 mg. per 100 cc., the total serum proteins 6.5 Gm.—3.5 Gm. of albumin and 3 Gm. of globulin. The carbon dioxide combining power was 47 volumes per cent. Van den Bergh tests on several different occasions gave immediate, direct reactions with serum bilirubins ranging from 5.5 to 13.1 mg. per 100 cc. The icterus index varied from 50 to 100 units. A serum cholesterol was 396 mg. per 100 cc. The serum amylase was 80 Somogyi units. Stools were consistently clay-colored and were negative for bile and urobilin. The prothrombin time was 14.5 seconds, with a control of 15.5 seconds. A glucose tolerance test showed a fasting blood sugar of 158 mg. per 100 cc., a peak of 270 mg. in one hour, and a gradual decline to 100 mg. at the end of five hours; glycosuria developed when the blood sugar level rose above 200 mg. per 100 cc.

X-ray examination of the chest demonstrated moderate arteriosclerotic changes of the aorta, but the heart and lungs were otherwise normal Examination of the esophagus, stomach, duodenum, and small intestine by a contrast medium failed to reveal any intrinsic lesion of these structures. However, the second portion of the duodenum was irregularly outlined, a finding interpreted by the roentgenologist as probably representing adhesions from the previous operation.

On the basis of the findings, it appeared reasonable to conclude that the patient had an obstructive jaundice. The responsible lesion could not be definitely established, but a common duct stone and a neoplasm of the ampulla of Vater, the pancreas, or the remaining biliary tree were considered as likely possibilities. The surgical consultants concurred in the diagnosis and advised exploratory celiotomy. At operation, the common duct was found to be obstructed by a lesion in the head of the pancreas, which proved to be malignant on frozen section. A biopsy specimen was removed, and the procedure was terminated with palliative choledochoduodenostomy. Following operation, the patient was presented to the Tumor Clinic.

Tumor Clinic Discussion

PATHOLOGIST: The biopsy sections consist of rather dense fibrous connective tissue containing clusters of lymphoid tissue around the periphery. Throughout the sections, one sees an irregularly scattered, infiltrating malignant process made up of hyperchromic, pleomorphic epithelial cells which are forming glands. There are numerous mitotic figures. On the basis of these sections alone, we cannot ascribe definitely the origin of the tumor. They are compatible with a malignancy arising in the gallbladder, in the common duct, or within the head of the pancreas. The diagnosis, therefore, is adenocar-

cinoma, probably arising in the head of the pancreas.

SURGEON: At operation, we felt that it would be impossible to resect the lesion arising in the head of the pancreas. Therefore, we had to content ourselves with an attempt to relieve the patient of her jaundice and to make a positive diagnosis. We felt very bad about cutting into the pancreas to get the biopsy specimen, but we wanted to establish the nature of the lesion, so that a definite prognosis could be given. Her immediate recovery has been somewhat complicated by the development of an incisional biliary-pancreatic fistula.

SECOND SURGEON: I think the surgeon is censuring himself unjustly for removing the biopsy specimen from the pancreas. We know that even with the pancreas in hand, we are often unable to differentiate carcinoma from chronic pancreatitis. In many cases a superficial biopsy specimen, even when carcinoma is present, does not suffice, since it is often reported as containing only inflammatory tissue. It is necessary to cut well into the body of the pancreas or into the bulk of the tumor tissue to get a good biopsy specimen, and unfortunately a very high percentage of these patients develop postoperative fistulas.

ROENTGENOLOGIST: X-ray therapy has nothing to offer these patients. As a matter of fact, in this particular case it would probably make matters worse by increasing drainage and skin ulceration around the fistulous site.

Tumor Clinic Opinion

Prognosis: Very poor.

Recommendation: Supportive therapy and relief of pain.

Comment: Whipple[1] emphasizes the fact that the diagnosis in these cases is characteristically so long delayed that operation usually reveals a cancer irremovable because of infiltration of adjacent structures or diffuse metastasis to the lymph nodes and liver. This delay, he points out, occurs because the symptoms of this lesion are similar to those of so many functional and organic disturbances of the upper abdomen, and also because jaundice is common to hepatic, biliary, and extrabiliary lesions. We feel that, without the delay of four months in bringing this patient to surgery, the lesion might have been resectable. Diagnosis at the time of her first attack of pain should have been facilitated by the history of an atypical diabetes and by the fact that the gallbladder had been removed previously. In retrospect, we feel that the true diagnosis should have been suspected and the pancreas immediately investigated.

1. Whipple, A. O.: Present-Day Surgery of the Pancreas, New England J. Med., 226:515-526 (March 26) 1942.

Follow-Up Note

Following operation, the patient's jaundice disappeared, and her symptoms improved markedly. The operative fistula closed eventually, and she was discharged on her twenty-fourth postoperative day. Her decline proved to be quite rapid, however, and she died four months later.

MEDICOLEGAL ABSTRACT

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MASTER AND SERVANT: *Acts which are necessary to the health and comfort of an employee while at work, though personal to himself and not technically acts of service, are incidental to the employment.*

This is a case in which the widow of a deceased person entered a claim originally before the North Carolina Industrial Compensation Commission for compensation, alleging that her late husband came to his death during the course of his employment and through causes arising out of that employment. The facts as found by the commission are noted below.

An employee of a life insurance company, an organizer, had occasion to go to an office located on the eleventh floor of the Security Bank Building in Raleigh, North Carolina, on business for his employer. While there, he found it necessary to visit the men's washroom. Shortly after entering the washroom, he went to one of the open windows in the washroom, slipped on the slick tile, and fell through the window to the roof of the adjoining building nine stories below. He died as a result of the fall. No one saw the deceased fall to his death, but a man had overheard him say, "Please help me to the window; I am about to faint." He had suffered from idiopathic ulcerative colitis for years, and that was presumed to be the

cause of his faintness. The windows in the room were of such size and location as to permit one to fall through them. The floor of the room was of tile, very slick, and was washed in the morning of each day. The body of the deceased was found directly beneath the open window.

The commission found as a fact that the deceased sustained an injury by accident, which arose out of and in the course of his employment as indicated above. This body also found that the fall and not the idiopathic ulcerative colitis was the proximate cause of death. Compensation was awarded to the widow, who was the only surviving dependent.

When the case was appealed to the superior court, the award of the commission was upheld. From this latter ruling, the defendants (insurance carrier and employer) appealed to the Supreme Court, assigning errors.

The Supreme Court was of the opinion that the accident occurred during the course of the deceased's employment, and arose out of the employment. Said the court: "He was at a place where his work carried him. He had become faint from a pre-existing idiopathic condition. He fell to his death by reason of an accident in slipping on the slick tile. At the time of the fall he was endeavoring to get himself in condition so as to be able to continue his employment. Such an act is regarded as an incident of the employment. Hence there was a causal connection between the employment and the injury."

The award made by the Industrial Commission and the superior court was affirmed. It should be mentioned that there was a dissenting opinion by one of the justices, who cited cases holding otherwise and presented logical reasoning against the majority opinion.

The question of medical interest in this suit is with reference to the cause of death. It was here held by the court that the proximate cause of death was an accidental fall. The pre-existing ulcerative colitis merely set the stage for the tragedy which followed.

(Supreme Court of North Carolina, spring term, 1946, V. 226 N. C., p. 325.)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XIX JULY, 1946 No. 7

MINIMAL pulmonary tuberculosis is a relatively new disease to most physicians because its recognition has awaited the general employment of improved X-ray techniques. Our familiarity with the classical findings and symptoms of *advanced* tuberculosis may be the very factor which causes us to overlook ill-defined manifestations of *early* tuberculosis. Here the X-ray often provides the missing clue.

THE EARLY DIAGNOSIS OF MINIMAL PULMONARY TUBERCULOSIS

There are numerous vital reasons that indicate the importance of diagnosing tuberculosis in the minimal stage. The percentage of arrested or healed cases is highest, and the time required to obtain an arrest of the disease much the shortest in minimal cases. Collapse measures are infrequent and when used are less extensive with complications, morbidity and mortality thereby reduced. The minimal cases, moreover, have far fewer recurrences. The percentage of those employed or able to work after treatment is much higher in this group.

The public benefits from the early diagnosis and cure of the disease. In persons with positive sputum, the spread of tuberculosis to their families and friends and the community is avoided. The shorter hospitalization period required for minimal cases means that public expenditures for them and their families are thereby definitely lowered.

To determine the factors that could aid the making of an early diagnosis, 200 cases with minimal lesions were studied. These patients were consecutive admissions to the Otisville Sanatorium, and all the cases were

minimal on admission, according to the standards of the National Tuberculosis Association. Of the entire series, 155 patients were between the ages of fifteen and thirty-five. Forty-five patients were over thirty-five years old, with 20 of them older than forty. There has not been enough emphasis on the fact that tuberculosis often occurs in the elderly. Far too frequently the symptoms of older people are explained on the basis of other conditions, such as chronic bronchitis, asthma or winter or cigarette cough. The 200 patients were quite evenly distributed according to sex and marital status. Several races and over forty different occupations were represented indicating that tuberculosis should be suspected at any age, in any occupation and with any type of social or economic background.

Sixty-seven patients (34 per cent) had had some contact with tuberculosis. A history of contact with this disease indicates that the patient obviously has had opportunities to become infected. The high tuberculosis morbidity and mortality rate for those with household contact has often been emphasized and the danger for children has been stressed. Every person who has had contact with tuberculosis patients should have a complete examination, including X-ray at once. This should be repeated every year, and preferably every six months. Lack of contact, however, does not rule out the presence of tuberculosis.

Of these 200 patients, only 37 (19 per cent) were without symptoms. One hundred and fifty-five patients had specific complaints, and eight gave a history of pleurisy. The statement has often been made that minimal tuberculosis is asymptomatic. This study significantly shows that the great majority of these patients do have symptoms. Certain symptoms are particularly frequent in minimal tuberculosis. Unfortunately, however, these are not characteristic or specific for this disease. Symptoms in themselves cannot serve as the sole criterion for the diagnosis of tuberculosis, but when present they should definitely suggest a chest X-ray examination.

Besides contact and routine examinations, the only factor that aided early diagnosis in this series was an acute onset of hemoptysis that prompted an immediate medical check-up. There is need for education of the public to consult physicians early regarding symptoms. The importance of the symptoms should be stressed, especially those that are not striking in character. In 21 patients a diagnosis of tuberculosis was not suspected or made at the first medical consultation.

Almost 75 per cent of the errors were in diagnosis of nontuberculous respiratory or upper respiratory conditions. To prevent these errors, it should be a routine practice not to make a diagnosis of pneumonia, bronchitis, asthma, pleurisy, chest cold, catarrhal fever or grippe without first considering tuberculosis. The symptoms and physical findings in these cases may be those encountered in tuberculosis. To determine definitely the presence of tuberculosis an X-ray and sputum examination and occasionally a tuberculin test are requisite for all these patients. This would not be an impractical or uneconomical procedure, for the yield of active cases of tuberculosis would be considerable.

The most valuable diagnostic physical finding in tuberculosis is the presence of rales, but only 29 per cent of these 200 minimal cases had rales. In minimal tuberculosis a normal physical examination is usual.

The demonstration of tubercle bacilli is, of course, absolute proof of tuberculosis, but the presence of a negative sputum does not mean that tuberculosis is absent. This is particularly true in minimal cases. In this series, 78 per cent were without positive sputum.

It is not necessary to wait for a positive sputum to make a diagnosis of minimal tuberculosis, since an early X-ray examination, properly followed up, will indicate the disease. Needless to say, in a case with a purulent sputum persistently negative for tubercle bacilli, tuberculosis is undoubtedly not present. Other laboratory findings were of little help in diagnosis.

The physician in general practice can be extremely valuable in finding cases of tuberculosis. The patients that come to physicians' offices are a fertile field for mass surveys. It is estimated that 30 per cent of the general population visit a physician during the year. Fluoroscopy is of definite value and is much better than a physical examination for the discovery of minimal cases, but it cannot be relied on solely for diagnosis. To be certain of the presence or absence of tuberculosis, it would be necessary to X-ray patients considered negative on fluoroscopy.

The main problem in the control of tuberculosis is that of early diagnosis. As the next step, however, treatment should be provided without delay. It is the duty of the physician to educate the patient and his family in the infectiousness of the disease and of the value and necessity of immediate care. A patient may delay proper attention at home, postpone seeking admission to the sanatorium or continue to work after the diagnosis because necessary home adjustments have not been made. To meet these situations requires the cooperation of public or voluntary social service and welfare associations and of public health nursing and medical groups. If such problems are taken care of, patients will be prompted to accept medical treatment as soon as the diagnosis has been made. The possibility of progression of the disease can then be diminished and the morbidity and mortality of advanced tuberculosis thereby avoided.

The Early Diagnosis of Minimal Pulmonary Tuberculosis, I. D. Bobrowitz, M.D., and Ralph E. Dwork, M.D. The New England Journal of Medicine, January 3, 1946.

Maternal Welfare Committee

MOST OBSTETRICAL DEATHS ARE PREVENTABLE

FRANK R. LOCK, M.D.
and
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An index of the progress made in the field of obstetrics is furnished by a comparison of recent with historic records. Simpson[1] in his classic text quotes the figures published by Boer and Arneth from the Vienna Hospital, where 1 woman in 55 had an operative delivery and 6 mothers and 50 babies died as a result of every 100 such deliveries. In the Paris Hospital, Lachapelle reduced his incidence of operative deliveries from 1 out of 57 in 1800 to 1 out of 82 in 1820. Although there is no record of his maternal mortality rate, it is known that an average of 36 babies were lost out of every 100 delivered by operative methods. During the same period in Dublin, where the incidence of operative deliveries was reported as 1 in 86 by Collins and 1 in 52 by McClintock and Hardy, 1 out of every 4 mothers and 3 out of every 4 babies were lost by operative procedures. In three fourths of the cases, infection was the direct cause of death following operative delivery.

The control of infection began about fifteen years after Simpson's death, with Pasteur's contributions to the understanding of contagion. By the time of Lister's death prevention of puerperal infection had already been reflected in an improved maternal mortality rate, and by 1915 only 6 mothers were dying for every 1,000 live births in the United States. However, from this date until 1936 the maternal mortality rate showed only a 5 per cent reduction, and about 13,000 mothers were dying each year—a maternal death every 36 minutes, or 40 each day[2]. Moreover, puerperal infection was causing 41 per cent of all maternal deaths, in spite of the improvements in aseptic technique. This paradox is partly explained by the high incidence of criminally induced abortions, which accounted for almost one fifth of the septic deaths[2].

In the last decade, with the advent of sulfonamides, penicillin, and plasma, and with a wider knowledge of whole-blood transfusions, there has been another rapid fall in the maternal death rate. The three basic problems of the obstetrician, however, have persisted throughout the centuries: toxemia, hemorrhage, and infection.

Obstetric records have improved remarkably in those areas of the United States where various agencies have been organized for a study of the factors responsible for maternal deaths. This improvement has been accomplished primarily through maternal mortality surveys. The most effective of these have been conducted by sending questionnaires to each physician recording a maternal death. He is asked to furnish as many of the circumstances as are known to him, and is free to call upon the county health officer for assistance in obtaining desired information. This service is often helpful in obtaining additional data in the many cases in which the physician is called only after complications have occurred, or in which the patient is moribund when first seen by the

Read before the Second General Session of the Medical Society of the State of North Carolina, Pinehurst, May 3, 1946.

1. Priestly, W. O. and Storer, H. R.: The Obstetric Memoirs and Contributions of Jas. Y. Simpson, Philadelphia, J. B. Lippincott and Company, 1855, vol. I, pp. 554-556.

2. Proceedings of Conference on Better Care for Mothers and Babies, Children's Bureau Pub. No. 246, U. S. Dept. Labor, U. S. Govt. printing office, Washington, 1938.

doctor. Completed questionnaires are filed by number rather than by name and are carefully analyzed.

The information obtained from these questionnaires has been useful in several respects. It is used to formulate a plan for the management of future cases presenting the same difficulties. By providing the material for group discussions, it leads to the adoption of the most recent advances in obstetrical technique. Moreover, the need for special facilities in a given area is often brought to light, and the maternal welfare committee is frequently instrumental in supplying these needs.

Statistics from surveys in various states show that the incidence of preventable deaths varies from more that 50 per cent of all maternal deaths in Arizona[3] to 73 per cent of those in Minnesota[4]. In some instances death could have been avoided only by the prevention or early interruption of pregnancy. Other deaths were due to failure of the patient to seek medical advice or to follow it after it was given. In some instances deaths occurred as a result of error in judgment or technique in the management of the problem presented by the patient. Still other preventable deaths occurred because of lack of adequate facilities for meeting an emergency complication. In the Minnesota study[4], it was found that no consultation was obtained for 56 per cent of the mothers who died, and that only curbstone consultation was obtained for an additional 35 per cent. In only 10 per cent of the fatal obstetrical cases was an adequate consultation obtained, and in many of these it was too late to be of much value to the patient.

An analysis of the above factors in relation to each of the three major causes of maternal deaths makes it obvious that inadequate prenatal care is an important factor in deaths due to toxemia. The figures which are available from some of the leading clinics in the country show that maternal deaths from toxemia are preventable under ideal conditions. Among the patients attending well regulated prenatal clinics, eclampsia occurs in only 1 out of 5,000 cases, and even in these instances, is usually not fatal. Moreover, early prenatal care is especially valuable in detecting hypertensive or renal disease which, according to Dieckmann and others, is the basis for 50 per cent of the hypertensive complications of pregnancy. Thus, one may say that half the deaths from toxemia could be prevented by early recognition of the existing problem, and the other half by carefully administered prenatal care.

There are several reasons for the widespread inadequacy of prenatal care. The most important of these is ignorance on the part of the laity. All too frequently, medical aid is not sought until the baby is born, and in many cases, then only if complications arise. Another factor is failure of the physician to appreciate and investigate relatively insignificant abnormalities seen early in pregnancy. A serious handicap in this regard is the inconvenience of obtaining adequate studies in a patient showing evidence of hypertensive disease or giving a history of previous renal disease.

In studying deaths due to hemorrhage, it is again found that the patient's failure to seek early medical aid is an important factor. Of even greater importance is the difficulty and inconvenience of rendering adequate medical care. Except in a few localities where a blood bank is present, blood transfusions are frequently neglected. Even in an urban area such as Philadelphia, transfusions were given to only 5 of 25 women who died as a result of bleeding from placenta praevia, and to only 1 of 33 women who died from postpartum hemorrhage. Additional causes of death from hemorrhage are mistakes in judgment or technique in handling the given complication. For instance, Johnson[5] has shown that women rarely die from their first hemorrhage in cases of placenta praevia but that many lives are lost by frantic attempts to control bleeding or to effect delivery with inadequate facilities and under conditions which contraindicate the procedure attempted.

An analysis of deaths from infection reemphasizes the importance of preventing serious hemorrhage, since anemia is a contributing factor in most such deaths. In spite of the availability of special therapeutic agents, such as penicillin, adequate hospital facilities are still of prime importance in preventing and treating sepsis. In well equipped hospitals the physician has the benefit of the facilities for blood transfusions and the necessary laboratory tests.

3. James, Howard C.: Maternal Deaths in Arizona during 1942, Southwestern Med. 27:298-299 (Dec.) 1943.
4. Minnesota Maternal Mortality Survey, Minn. Med. 27: 475 (June) and 557 (July) 1944.
5. Johnson, H. W.: The Conservative Management of Some Varieties of Placenta Praevia, Am. J. Obst. & Gynec. 50: 248-254 (Sept.) 1945.

The role of criminal abortions in deaths due to sepsis is complicated by many economic and social factors. While education in the use of contraceptives is not the ideal solution of the problem, it represents the most practical method available to the medical profession. In some areas, the establishment of contraceptive clinics has been prompted by an analysis of maternal deaths due to infection.

Statistics for North Carolina show that the maternal death rate in 1914 was 12.4 per 1000 live births; in 1918 the rate rose to 17.6, probably as a result of the influenza epidemic. After that time, gradual progressive improvement began, and by 1944 our rate had fallen to 2.9 maternal deaths per 1,000 live births. We have invariably had a higher maternal death rate than the average for the nation, however. From previous studies we are already aware of some of the factors contributing to our long-standing and unenviable position among the eight states with the worst records. Of our 90,548 births per year, 14,834 are unattended by a physician. Inadequacy of prenatal care and consultation facilities are indicated by the fact that eighty-four of our maternal deaths in 1944—31 per cent of all our maternal deaths—were due to the hypertensive toxemias. Bradford[6] has found that in only 1.7 per cent of our cases of eclampsia had the patients had minimal adequate prenatal care. This figure is closely comparable to that for Minnesota, where only 1.8 per cent of all maternal deaths were among those patients receiving adequate prenatal care.

In spite of the fact that North Carolina has contraceptive clinics in many parts of the state, there were in 1944 32 deaths due to abortions, 21 of them complicated by infection. These deaths, as well as the 57 deaths which occurred in 1944 as a result of hemorrhage, reflect the paucity of blood banks and hospital beds throughout the state.

From the above meager statistics, it can be seen that the physicians of North Carolina are practicing obstetrics under adverse circumstances. Through its Maternal Welfare Committee, the Medical Society of the State of North Carolina proposes to analyze the preventable factors in our maternal deaths and to institute suitable constructive measures according to the needs of various areas.

6. Bradford, W. Z.: Toxemia Mortality in Southern States; Critical Study of 577 Maternal Deaths in North Carolina, Am. J. Obst. & Gynec. 38:574-586 (Oct.) 1939.

Summary

From surveys in many areas throughout the nation, it has been found that about two thirds of maternal deaths are preventable. The major causes of death have been toxemia, hemorrhage, and infection. By study of individual cases, the contributing factors in various areas can be determined. Some of these are: (1) lack of an adequate program for preventing pregnancy when it is contraindicated, (2) failure to educate the laity in the value of prenatal care, (3) inadequate hospital facilities for care of complicated cases, and (4) unavailability of adequate consultation for complicated cases.

The Medical Society of the State of North Carolina has instructed its Maternal Welfare Committee to make a state-wide maternal mortality survey. The data thus obtained will be used to ascertain the individual problems of the physicians in various areas, and to assist them in carrying out constructive measures for the prevention of maternal deaths.

Medical Research Center Proposed

Major General Norman T. Kirk, Army Surgeon General, announced proposed plans for an Army Medical Research and Graduate Training Center at a press preview of Medical Department's exhibit booked July 1-5 for American Medical Association's 95th annual session in San Francisco. The proposed Army center would be located at Forest Glen, Maryland. It is the site of National Park College which was converted to a convalescent hospital during the war to care for Walter Reed General Hospital patients. When the project is approved it will take approximately twelve years to construct.

With an eye toward post-war responsibilities of the Army Medical Department, such a center will consolidate Army research activities. Information gleaned in all Army laboratories now scattered throughout the United States and Panama would become available at the center. Rare maladies encountered would be subjected to expert civilian and military scientific study as patients suffering such diseases would be transferred to a 1,000 bed general hospital which will be established in the center for clinical observation.

* * * *

Medical History of World War II Will Be Written in Three Parts

The first meeting of the Advisory Editorial Board on the Medical History of World War II was held in the Office of The Surgeon General on May 9, 1946. The meeting was opened by Major General Norman T. Kirk, The Surgeon General, who assured the Board of his interest in the medical history. He expressed the hope that with the assistance of the Board and the contributors "the job of writing the history would be as well done as was the job done by the men and women who made medical history during the war."

BULLETIN BOARD

PRESIDENT'S MESSAGE

The officers of the Medical Society of the State of North Carolina have adopted the policy of having various committees of the Society present from time to time in the JOURNAL some phase of their work that is considered to be of general interest to the members. In this way, we hope that the membership will be kept informed of the work of the various committees.

Dr. George Carrington, chairman of the committee to cooperate with the National Physicians Committee, presents here an analysis of the three important medical bills now before Congress. In the next issue, a discussion of the North Carolina medical care plan will be presented, in order that its features may be compared with those of Senate Bill 1606, the current Wagner-Murray-Dingell Bill.

W. M. COPPRIDGE, M.D.

* * * *

MEDICAL BILLS IN CONGRESS

The purpose of this article is to present brief analyses of the three medical bills currently in the limelight in Congress.

S. 191, the Hill-Burton hospital bill, should be a very useful measure and deserves general support.

S. 2143, usually referred to as the Taft bill, appears to be a sane attempt to meet the problem of medical care for the indigent. If such legislation becomes necessary on a national scope, this bill sets a good pattern. It would probably be better, however, to start with the Hill-Burton bill and later determine whether such a bill as S. 2143 is necessary. It may not be.

S. 1606, the Wagner-Murray-Dingell bill, with its system of state-medicine regimentation, is anathema to believers in freedom. It appears to stem directly from the International Labour Organisation[1].

One of the great arguments of the proponents of this bill has been the statement that 5,500,000 men were rejected for the armed forces out of 15,000,000 examined. That argument and those statistics have been punctured by Dr. Lowell S. Goin of Los Angeles, who examined the statistics and found the following to be the facts:

1. See Editorial, "What Price Internationalism?" North Carolina M. J. 6:522 (Dec.) 1945.

The number actually rejected as being mentally or physically unfit was 4,217,000. Of these, 701,700 were rejected for mental disease; 582,000 for mental deficiency; 448,000 for blindness, deafness, or loss of an arm or leg; 320,000 for musculo-skeletal defects (club foot, paralysis, congenital dislocation of the hips, and so forth); 280,000 for syphilis (free treatment is available practically everywhere); 220,000 for hernia, and 160,000 for defective vision. The remaining 1,500,000 apparently includes the men rejected because of tuberculosis, asthma, hypertension, cardiovascular or renal disease, diabetes, ulcers and allergies.

Dr. Goin's analysis would indicate that no system of medical care could greatly improve the situation. In England, which has a less drastic state system of medicine than that proposed in the Wagner-Murray-Dingell bill, and has much lower standards for the armed services, the rejection rate was stated as 50 per cent. We seem to have done fairly well on a comparative basis.

S. 191 (Hill-Burton)

S. 191 was introduced December 12, 1945, and referred to the Committee on Interstate and Foreign Commerce.

This is an act to amend the Public Health Service Act to authorize grants to the states for surveying their hospitals and public health centers and for planning construction of additional facilities, and to authorize grants to assist in such construction.

To be approved, a state application for funds must:

(1) Designate the responsibility to a single state agency.

(2) Provide for designation of a state advisory council (Sec. 612-a-2).

(3) Provide for making an inventory of existing facilities and a survey of the need for hospitals and other similar facilities.

The sum of $5,000,000 is provided for the purpose of making the surveys in the several states. $75,000,000 per year for five years is authorized for the construction of public and other non-profit hospitals.

The Surgeon General of the Public Health Service, with the approval of the Federal Hospital Council and the administrator, shall prescribe the number of general hospital beds and health centers needed, the

method of determining priority of projects, and the general standard of construction for the hospital in a state aided under this bill.

Hospitals assisted under this plan shall make no discrimination on account of race, creed, or color, but separate hospital facilities may be provided for separate population groups. Indigent persons shall receive free service in these hospitals, so far as is feasible from a financial standpoint.

The federal government will pay for one third to three fourths of the cost of construction. The federal government is not to have supervision or control over the administration, personnel, maintenance, or operation of any hospital under this act.

If the Surgeon General does not approve a state plan, the state can appeal to the Federal Hospital Council, which consists of the Surgeon General and eight members appointed by the administrator—five of whom shall be persons outstanding in fields pertaining to hospital and health service.

The Health Subcommittee of the House Committee on Interstate and Foreign Commerce has reported S. 191 to the full committee, with these amendments: Striking out the privilege of appeal to the court, and adding a new Section 3 giving the Public Health Service additional personnel. No statement has been made as to when the bill will receive the consideration of the full committee.

S. 2143 (Taft-Smith-Ball)

S. 2143 was introduceed May 3, 1946, and referred to the Committee on Education and Labor.

It is a bill "to coordinate the health functions of the Federal government in a single agency; to amend the Public Health Service Act for the following purposes: To expand the activities of the Public Health Service; to promote and encourage medical and dental research in the National Institute of Health and through grants-in-aid to the states; to construct in the National Institute of Health a dental research institute and a neuropsychiatric institute; and for other purposes."

Title I

A National Health Agency is created, administered by an administrator who is a doctor of medicine appointed by the President. The National Health Agency will be composed of the following units:

(1) The Office of the Administrator
(2) The Public Health Service
(3) The Food and Drug Administration
(4) The Office of Vocational Rehabilitation
(5) The Office of Maternal and Child Health
(6) The Office of Health Statistics
(7) Such other constituent units as the administration finds necessary.

Title II

Three new titles are added to the Public Health Service Act—titles VII, VIII, and IX.

Title VII provides $200,000,000 a year for five years, and after that the amount to be authorized, to assist the states to provide general health, hospital, and medical service for families and individuals with low income.

Any state desiring to take advantage of this Title must submit a plan that designates a single state agency for carrying out the plan, but after 1948 such agency shall be the state health agency.

The state agency must set up a program designed in five years to provide hospital, surgical, and medical service in hospitals for persons having insufficient income to pay the whole cost of service. It must also provide health service for all children in elementary or secondary schools in the state. Such plans may also, at the option of the state, provide office and home care. This may be done through insurance in non-profit organizations. Such services shall be without discrimination on account of race, creed, or color. The state or its subdivisions shall contribute at least twice the amount of the federal aid. The amount paid to each state by the federal government depends upon the state's population and tax-paying ability.

If any state plan is disapproved by the Surgeon General, the state may appeal to the National Health Council. After it is in operation adverse rulings by the Surgeon General may be appealed to the federal courts.

The National Health Council consists of the Surgeon General and eight members appointed by the administrator. Five of these shall be persons outstanding in fields pertaining to health activities, three of whom shall be doctors. The other three members shall be familiar with needs for medical care.

Title VIII relates to dental services for school children, families, and individuals

with low income. It is rather similar to the medical plan. It begins with $8,000,000 per year and increases to $20,000,000 in 1950. It again requires a single state agency. In the care of school children, the principal or head of the school is the person certifying that the child has insufficient funds.

Title IX provides for further research and training.

A—A national institute of dental research is created. Provision is also made for aiding research in other institutions.

B—Provisions of somewhat similar nature are made for neuropsychiatric research.

C—Buildings in or near the District of Columbia are authorized for dental and psychiatric research.

Title III

Various other amendments are made to Public Health Service Act, consisting mainly of changes in wording.

Provisions are also made authorizing employees of the United States government, upon their request, to have salary deductions made for payment to any public or private insurance fund as directed by employee.

S. 1606 (Wagner-Murray-Dingell)

S. 1606 was introduced November 19, 1945, and referred to the Committee on Education and Labor. This bill has two titles.

Title I

Title I has three parts—A, B and C. Part A provides grants to the states for control of venereal diseases and tuberculosis and for the extension of public health work. Part B provides grants to states for maternal and child health service. Part C provides grants to states for medical care of needy persons. Needy persons are not defined.

Title II

Title II provides a system of governmentally controlled health insurance. It is administered by the Surgeon General under the approval of the Federal Security Administrator. There is an advisory council whose function is purely advisory.

Any physician, dentist, or nurse can work under the act, and any individual is stated to be able to select the physician of his choice from those designated (205-a). The Surgeon General, however, may prescribe the maximum number for whom any practitioner, physician, or dentist may undertake to furnish care. He can also set standards for specialties and decide who is a specialist (205-c). The services of a specialist, however, are to be available only upon the advice of a general practitioner or another specialist, or upon approval of an administrative officer (205-d).

Section 205-1 makes the provision of medical care in each area the collective responsibility of all practitioners who have undertaken to furnish such benefits.

The Surgeon General also designates the hospitals that are to participate under this plan (206-a).

Benefits under the plan are limited under Section 210-a, which states that "every individual entitled to general medical, general dental, or home-nursing benefit may be required by the physician, dentist or nurse furnishing such benefit to pay a fee with respect to the first service or with respect to each service in a period of sickness or course of treatment."

Maximum hospital benefits are limited to sixty days in any one year, with a provision that if funds are adequate they may be increased.

The method of raising funds for carrying out the provisions of the bill is not included.

GEORGE L. CARRINGTON, M.D.
Chairman, State Committee for Cooperation with the National Physicians Committee for Extension of Medical Service

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A COMPREHENSIVE PLAN FOR BETTER MEDICAL CARE AND BETTER DISTRIBUTION OF PHYSICIANS, WITH SPECIAL EMPHASIS ON THE RURAL SECTIONS

Statement by Dr. W. C. Bostic, Forest City, on S. 1606 before the Senate Committee on Education and Labor, May 4, 1946

"1. We must recognize and admit the fact that we do have a vital issue for consideration and to accept the responsibility of offering some tangible, workable solution in order to meet the pressing needs for better medical care for the citizens of the nation. To do this, we must first recognize the problem, what it is, and what has happened before we can offer a correct agenda for the study of the problem. At present it appears that all the factions contending for a solution of the problem have their agenda up-side-down. We would suggest that the study of the insurance feature as proposed by all factions should be placed at the bottom of the agenda and the all-important matter of better distribution of physicians should be placed first for consideration. We agree that the insurance feature is of interest to all concerned, and it will certainly be good feed for the horse, but we seem to be minus

the horse. We are not able to understand just how a vast program of better medical care can be had without the special training of more doctors to staff the hospitals, scientific research laboratories and the many localities without physicians such as the rural districts of every county in the United States. I think the program as outlined by the American Medical Association concerning the insurance feature is worthy of serious consideration, also that feature offered in the President's plan might help in the solution of the problem. However, we may defeat the President's Health Plan and forestall socialized medicine, but we will still have the unsolved problem of better medical care and an economic problem of tremendous importance, and a moral obligation that we dare not shirk. It is perfectly clear to those of us who have made a careful study and analysis of this problem over a period of years that the answer does not lie in compulsory insurance or in voluntary insurance, unless some satisfactory plan can be devised that will insure a more equitable distribution and placement of doctors, especially in the rural districts.

"2. There should be created a well-balanced program broad enough to solve every phase of the proposition confronting us with the needs of the nation at this time without creating a top-heavy overhead wasteful administration of funds before they reach the channels of relief. With such a plan of Federal assistance conjointly with various states on a fifty-fifty basis, the funds will trickle through to the various counties and communities of each state with proper safeguards in dispensing appropriated funds from the state and Federal Government.

"3. The ideal solution of this vital problem for the health and well-being of the nation is a well-balanced program similar to that provided by the Duke Endowment to the various hospitals and other institutions of North and South Carolina, and with a similar plan proposed and supported by the last Legislature of North Carolina which will in the near future be consummated. Why spend billions of dollars when a few hundred millions placed in the proper channels will offer the solution desired? We believe this entire problem can easily be solved and without the expenditure of billions of dollars. I hope we can make this claim without "the sound of brass or a tinkling cymbal." Especially if we adopt the plan and the slogan that the Lord helps those that help themselves.

"4. To illustrate, the Federal Government and the various states enter into an agreement on a fifty-fifty basis that will actually supply the needs and place adequate medical care within reach of all the people, and to duplicate the amounts donated by established foundations already acting in this field of endeavor in the various states like the Duke and Reynolds Endowment, the state and various religious organizations combined. With such Federal assistance, North Carolina can and will solve its own insurance feature, giving adequate medical, dental and nurses care to all its citizens, without a great waste of funds in overhead expense.

"5. We understand that South Carolina and some of the other Southern states have under consideration similar plans; and if this can be done in North and South Cardina without making a vast expenditure, why can it not be done for the entire United States with only a few hundred millions annually appropriated over a period of several years, and with the problem of better distribution of physicians solved by the plan as proposed along with the dental and nurses problem which is also to be considered in the solution of adequate medical care at this time. Of course, along with the consideration of the medical care plan, the dental and nurses care must be considered as of vital importance by the various states. With the erection of more hospitals, and with rural health centers to be located deep in the rural sections of the state, with competent and well-trained physicians to serve such communities for a period of five years with limited licenses in such fields of practice.

"6. First and foremost is the demand and need for more physicians to fill vacancies caused by death and retirement of physicians and the increase in population, and better distribution of doctors for the rural sections of the state and nation. Many splendid rural communities have suffered and died for the need of better medical care. It will be necessary for the federal government to offer financial assistance to the various medical colleges and to build more medical colleges and teaching hospitals for the training of doctors for this special service, by giving them free scholarships to young men and young women with limited means with an ambition to study medicine, with the understanding that in consideration of such scholarships they will be willing to tie themselves into service in the rural sections for a period of five years by accepting a limited license.

"7. These fields can be made attractive and inviting to this class of physicians with proper equipment such as a modern home and modern offices that enable them to render every service that is offered in a modern hospital except major surgery; and with splendid monetary returns since they would practice medicine in a large field without competition, enjoying all the courtesies of the medical profession and the medical associations of the state.

"8. To have a well-rounded program it will be necessary to provide such measures as will offer health insurance and hospitalization, such as the Blue Cross, Industrial, Group and other organizations, on a voluntary basis at a cost within reach of every man, woman and child that will insure them the security of every health service needed and with provisions for the care of worthy charity and destitute cases. We would favor a plan of industrial insurance such as offered in the plan of the Industrial Compensation Insurance for payment of doctors' and hospital bills for sickness and health measures the same as served under the present compensation laws of the states for personal injury cases, with no payment to be made out of such fund for security or loss of time which might hamper the industries with employees who might, under the care of unscrupulous physicians, be out too much with imaginary ills. Such insurance would cover a large field and remunerate the physicians in a fine way for their services. We would oppose compulsory insurance by taxation and free medical care to all classes. To offer free medical and surgical treatment would likely create a race of impotent people that would have to be fed and clothed. We certainly should not attempt to create charity in order to be charitable. The Master while on earth practiced the healing art without a monetary charge, but in every instance he called for some action on the part of his patients to aid themselves. He said to the man with the withered arm, "Stretch forth thine arm." To another, He commanded him to go and dip himself seven times in a certain pool. And to the impotent man, He said, "Rise, take up thy bed and walk." We certainly should not attempt to be more charitable than the Saviour himself. Most people recover faster when they are allowed to have part in the healing of their bodies.

"9. And in this broad program for better health measures, the federal government would be expected

to establish and maintain scientific research centers for the study and care of unusual conditions.

"10. In order that the nation's interest and the interest of the medical profession and the people at large have as a medium between the Federal Government, the medical profession and the citizens at large, a physician should be included in the President's Cabinet, to be known as Secretary of Health. A complete chapter could be offered sustaining this suggestion, and there is no valid reason for opposing such suggestion for the good of all.

"11. I am not entirely in accord with the American Medical Association for the reason they have omitted to offer a satisfactory solution for the problem of better distribution of physicians and to supply physicians in the rural districts. No plan for better medical care can succeed without placing this feature at the head of the agenda. I am a member of the American Medical Association—I trust in good standing; but I do not approve the omission of this most important of all feature.

"12. To say that the expenditure of billions of dollars would be necessary to solve the entire problem as suggested is blind reasoning on the part of those who would hurry the medical profession into political medicine and the nation into totalitarianism."

Home Treatment Plan for Veterans' Service-Connected Disabilities

The story in **Collier's** of May 11, 1936, directing attention to the fact that North Carolina doctors and hospitals were leaders in cooperating with the Veterans Administration to provide home treatment for veterans' service-connected disabilities, brought many inquiries for details of the plan. Publication of this article was followed by stories in North Carolina newspapers, and already more than 300 veterans are receiving treatment under this plan.

Since there are several thousand veterans in the state eligible for this service, the following explanation of the plan has been prepared by the Hospital Saving Association.

Attention is particularly directed to the underlined portion of the explanation. It is essential that **Veterans Administration authority be obtained in advance of treatment or examination,** except in an emergency, when the case must be reported to the Veterans Administration in Winston-Salem within twenty-four hours.

The Hospital Saving Association will be glad to answer any further questions that might arise about the operation of this plan.

* * * *

Under contracts with the U. S. Veterans Administration, the Hospital Saving Association of Chapel Hill is administering the program for outpatient treatment and hospitalization for service-connected disabilities.

Veterans requiring these services may make application through their doctor, through any office of the North Carolina Veterans Commission, through contact officers of the Veterans Administration, and through offices of the Hospital Saving Association.

Authorization by the Veterans Administration is essential to payment by the government and it **must normally be procured in advance.**

In emergencies, the Veterans Administration requires notification within twenty-four hours of treatment. The doctor or hospital is requested to call, collect, Dr. A. J. Weirick, Out-Patient Service, Veterans Administration, Winston-Salem, and report the name of the veteran, his address, his Veterans Administration claim number when veteran has been assigned such number, date of discharge, complaint of veteran and diagnosis, and name of hospital. Following the call, the regular forms, in duplicate, should be submitted to the Hospital Saving Association.

Application forms for this home service are now in the hands of doctors who have executed participation agreements, and of veterans service agencies. Additional copies may be obtained from the home office of the Hospital Saving Association in Chapel Hill.

If form is not available, application may be made by letter giving full information.

If a veteran applies for this service who has not established a record of service-connected disability, application for examination will be handled in the same manner as for authorizations for treatment.

Applications are sent to the Hospital Saving Association home office in Chapel Hill, which handles them with the Veterans Administration for necessary approval.

When formal authorization for services is issued by the Veterans Administration to the Hospital Saving Association, it sets up a case file and authorizes the doctor or hospital selected by the veteran to render the required services.

For the initial authorization, several days will be required to set up the case record, but after the veteran receives his first examination or treatment, his doctor can arrange further services that may be necessary as a matter of routine.

The doctor or hospital sends the bill to the Hospital Saving Association, which audits and pays it according to uniform fees established by the Veterans Administration.

If the veteran did not specify a doctor or hospital in his application, Hospital Saving Association furnishes him with a list of doctors eligible to render service.

When this service is authorized, the veteran has free choice of doctor or hospital and receives treatment among friends in his own community.

Under the law at present, the government is obligated to furnish local hospitalization to male veterans only when no bed is available in a veteran's hospital. Hospitalization is, at present, available to all female veterans for treatments exclusive of pregnancy.

Veterans Administration

Two Duke University specialists are among fifteen outstanding physicians and surgeons appointed consultants to the Richmond Branch Medical Service of the Veterans Administration.

Dr. Daniel B. MacCallum, medical director of the VA Branch, explained that these consultants are cooperating directly with the branch medical service and are in addition to the more than 100 consultants assigned to VA hospitals in the branch area, which includes North Carolina, Virginia, West Virginia, Maryland, and the District of Columbia.

Dr. Barnes Woodhall, professor of neurosurgery at Duke, was appointed consultant in neurosurgery, while Dr. Paul Reque, who teaches dermatology and syphilology at the university in Durham, was made consultant in those fields.

Wanted: Basal metabolism machine, new or used (in good condition), McKesson or Jones types desired. James B. Lounsbury, M.D., Wilmington, N. C.

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News Notes from the Bowman Gray School of Medicine of Wake Forest College

Dr. Lloyd J. Thompson has assumed his duties as professor of psychiatry.

* * * *

Mr. and Mrs. Benjamin F. Bernard have given the medical school their estate known as "Graylyn," and sufficient funds to cover any deficit incurred in its operation during the first few years. This estate will be used by Dr. Thompson in conjunction with his program for psychiatry.

* * * *

Dr. J. Richard R. Bobb, recently in training at the Halloran General Hospital, Staten Island, N. Y., assumed his duties as instructor in physiology on July 1, 1946.

* * * *

Dr. Richard A. Groat, formerly assistant professor of neurology at Northwestern University, has assumed his duties as assistant professor of anatomy in charge of neuroanatomy.

* * * *

Dr. C. C. Carpenter, dean, attended the meetings of the American Society of Clinical Pathologists and the American Medical Association in San Francisco.

* * * *

Dr. David Cayer and Dr. Wingate M. Johnson of the Department of Medicine were speakers at the San Francisco meeting of the American Medical Association, July 1-5. Dr. Cayer spoke on the subject of vitamins before the Section on the General Practice of Medicine, and Dr. Johnson gave, as the chairman's address for that section, a paper entitled "Will the Family Doctor Survive?"

Edgecombe-Nash Counties Society

A movie sponsored by the State Board of Health and dealing with certain pediatric problems was shown at the June meeting of the Edgecombe-Nash Counties Society, held in Rocky Mount on June 12.

North Carolina Doctors Released from Service

The following list of North Carolina physicians recently separated from service is compiled from the **Journal of the American Medical Association** and other sources. Any additions or corrections should be sent to the editorial office, 300 S. Hawthorne Road, Winston-Salem 7, N. C.

Anderson, Raymond B., Durham
Anderson, Richard S., Whitakers
(formerly of Rocky Mount)
Ballard, Claude H., Jr., Kinston
Ballard, Thomas F., Charlotte
Barringer, Phil L., Hickory
Boney, Elwood R., Kinston
Braudwell, Leslie J., Wendell
Breeden, William H., Fayetteville
Brookshire, Harley G., Jr., Asheville
Brown, Frank R., Greensboro
Bryant, Vernon M., Elm City
Cekada, Emil B., Durham
Corwin, Warren C., Greensboro
Cox, Alexander M., Madison
Falls, Fred, Lawndale
Farmer, Joseph A., Shelby
Garrard, Robert L., Greensboro
Green, Donarell R., Jr., Durham
Haines, Charles E., Jr., Durham
Hairston, Roy C., Asheville
Hardre, Rene, Greensboro
Haywood, Hubert B., Jr., Raleigh
Heinitsh, George, Fayetteville
Helms, Jefferson B., Morganton
Hickman, Harry S., Lenoir
Jacobs, Paul, Oteen
Karansky, Stanley, Durham
Kernodle, Harold B., Durham
Kirchberg, Roy W., Sylva
Lambert, Critz F., Spruce Pine
Lanier, Verne C., Welcome
Lott, William C., Asheville
Martin, Lester P., Mocksville
McCall, Robert E., Jr., Marion
McCulloch, Rudolph P., Durham
McGuffin, William C., Asheville
McKee, John S., Jr., Morganton
McRae, Cameron F., Durham
Miller, Robert P., Lincolnton
Mills, Hugh H., Forest City
Mills, James C., Henderson
Moore, Robert L., Hickory
Moore, Roy H., Canton
Morey, Milton B., Newport
Munroe, Henry S., Jr., Charlotte
Newman, Glenn C., Durham
Phillips, Neal J., Lattimore
Pittman, William A., Fayetteville
Redwine, James D., Lexington
Rollins, Charles D., Henderson
Shanks, William C., Jr., Burlington
Sikes, Charles H., Greensboro
Sloan, William S., Wilson
Smith, O. Norris, Greensboro
Sowers, Roy G., Jonesboro
Stauffer, Charles C., Durham
Street, John M., Durham
Templeton, Ralph G., China Grove
Thompson, John W., Jr., Murphy
Weinstein, Morton H., Fairmont
Wilkinson, Charles T., Wake Forest
Williams, Ernest H., Rocky Mount
Williams, McChord, Charlotte
Wilson, George D., Kernersville

News Notes

Dr. Glenn S. Edgerton has announced the opening of his office for the practice of obstetrics and gynecology in the Professional Building, Charlotte. He will be associated with Dr. R. T. Ferguson.

* * * *

The staff of Highsmith Hospital, Fayetteville, has announced the association of Dr. Robert W. King, in internal medicine. Dr. King has recently been released from the army medical corps.

* * * *

Dr. John S. McKee, Jr., of Raleigh, has been appointed assistant superintendent of the State Hospital at Morganton. He was recently released from the army medical corps.

* * * *

Dr. Paul O. Schallert, formerly of Winston-Salem, is now chief medical officer at the Veterans Administration in Orlando, Florida.

For sale or lease—Lowery Hospital, Salisbury, N. C. Apply to Dr. J. R. Lowery, Salisbury, N. C.

BULLETIN BOARD CONTINUED ON PAGE 336

This is Announcing

the opening of

Pine-Crest Sanitarium

at Southern Pines, N. C., August 1, 1946, with Dr. T. G. Peacock as Medical Director.

This Institution will specialize in the treatment of alcoholism by the conditioned reflex aversion method and the care of selected cases of mild mental and nervous conditions.

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AUXILIARY

AN OPEN LETTER FROM THE PRESIDENT

Dear Auxiliary Members,

As your president, I bring you greetings and thanks for giving me the privilege of serving you. Our theme for the year is *Service to Others*. I pledge you the very best that I know in service. I know you will meet me half-way as we join hands and march forward into a new year, not a year with War to spur us on, but a year of Peace to call forth the best that we can give. How easy it would be to settle back into our old ruts, relax, and let someone else carry on, but this is not the way of doctors' wives. We have lengthened our stakes, and there is no turning back.

After my husband had suffered three coronary occlusions plus a virus pneumonia and other complications, I asked him if he did not think I should resign from all Auxiliary duties, as my mind might be so divided that I could not give good service. He replied, "No indeed; whatever happens to me, you *must* carry on." I think it was the first time in our thirty-one years of married life that he said "You *must*." So, with your indulgence and sympathetic understanding, I will carry on.

Great progress was made last year under the fine leadership of Mrs. Bell. To keep up the fine standard she maintained through the year, we can do no better than to set as our goal, *Every doctor's wife a member and every member responsible for at least one subscription to Hygeia*. When this is accomplished, our sanatoria funds will be adequate to assure our three patients of continued care throughout the year.

Mrs. D. M. Royal of Salemburg, our *Hygeia* chairman, would be very happy to secure your subscriptions to that magazine. The $2.50 that the subscriber pays will bring her the magazine for twelve months, and *every commission that we receive will pay our expenses for one sanatorium patient for one and one-half days*. A word to the wise is sufficient!

For the benefit of those who live in small places where they do not have a local auxiliary, may I urge you to send your membership dues of $1.00 to

Mrs. E. C. Judd,
2108 Woodland Avenue,
Raleigh.

We need you as members-at-large.

It would be such fun to sit down and talk over our Auxiliary work together, but as this is impossible, may we, through the kindness of Dr. Wingate Johnson, who gives us this space in the JOURNAL, clasp hands across the miles that separate us and pledge our best efforts for a successful year.

MRS. FREDERICK R. TAYLOR,
President.

BOOK REVIEWS

Physical Chemistry of Cells and Tissues. By Rudolf Hoeber, M.D., University of Pennsylvania School of Medicine, with the collaboration of David I. Hitchcock, J. B. Bateman, David R. Goddard, and Wallace O. Fenn. 676 pages, with 70 illustrations. Price, $9.00. Philadelphia: The Blakiston Company, 1945.

The character of this book is well summarized in a statement in its preface: "The subject of the book is physiology; not 'physiology from above,' but 'physiology from below'; not physiology originated essentially to fill human needs and help suffering individuals, but physiology as a branch of physical chemical science dealing with life as a physical, though exceeding complex system, that may be subjected to scientific analysis like any other natural object."

Beginning with a survey of the fundamentals of classical physical chemistry, the author proceeds to a discussion of the physiological and chemical characteristics of protoplasm.

This book will be of interest to biologists generally and to those particularly interested in the field of cytology.

Diseases of the Nose, Throat and Ear. Edited by Chevalier Jackson, M.D., Sc.D., LL.D., F.A.C.S., Honorary Professor of Broncho-Esophagology, Temple University, Philadelphia; and Chevalier L. Jackson, M.D., M.Sc., F.A.C.S., Professor of Broncho-Esophagology, Temple University, Philadelphia. With the collaboration of 64 outstanding authorities. 844 pages with 934 illustrations on 581 figures, including 18 plates in color. Price, $10.00. Philadelphia and London: W. B. Saunders Company, 1945.

Because of the practical presentation of its subject, this new volume should be of interest to the general practitioner as well as to the specialist. The eight parts of the book are devoted to the nose and nasal accessory sinuses; the mouth, fauces, and pharynx; the ear (including a discussion of the fenestration operation); the larynx and hypopharynx; the trachea and bronchi; the esophagus; foreign bodies in the air and food passages; and general considerations (endoscopic photography, avia-

tion otolaryngology, focal infection, chemotherapy, anesthesia, pulmonary tuberculosis from the surgical standpoint, and general phases of examination and treatment of patients).

The greatest criticism of this book is the incompleteness of the bibliography in some sections. Nevertheless, the book is well worth a place in the otolaryngologist's library.

The Diagnosis and Treatment of Pulmonary Tuberculosis. By Moses J. Stone, M.D., Assistant Professor of Medicine, Boston University School of Medicine; Instructor in Medicine, Tufts Medical School; Physician-in-chief, Chest Clinics, Beth Israel Hospital and Massachusetts Memorial Hospitals, Boston; and Paul Dufault, M.D., F.A.C.P., Superintendent of the Rutland State Sanatorium, Rutland, Massachusetts. 325 pages. Philadelphia: Lea & Febiger, 1946.

This pocket-sized book is designed to give students and practitioners a practical knowledge of tuberculosis and its treatment. In the historical introduction the authors point out that in the past tuberculosis has been one of the chief causes of death over the world.

The sections on pathology are excellent. The discussions of immunity and allergy in tuberculosis are good. The importance of the history, the physical examination and careful repeated stains of the sputum is stressed. The use of pneumothorax collapse therapy is well discussed, though the 2 to 5-year period recommended for collapse seems long. The procedures of thoracoplasty and pneumonectomy are considered.

The book is printed on excellent paper and the illustrations, especially the histopathologic sections and x-rays of the chest, are well chosen and well reproduced. A small number of well selected references are included at the end of each chapter.

A Malariologist in Many Lands. By Marshall A. Barber, M.D. Price, $2.50. 158 pages. Lawrence, Kansas: University of Kansas Press, 1946.

This delightful compilation of reminiscences has been written by one of the foremost malariologists of our time. The author describes his early recollections of Kansas and the problem of malaria there. He then recounts highlights from his experiences in the Caribbean, the Philippines, Malaya, Africa, Europe, India, and Brazil. His particular study and interest was the habits of individual mosquitoes and the bearing of their habits on malaria in the locality. Of special interest are his studies on Anopheles gambiae in the invasion of Brazil in the last decade.

The effect of war and famine on the prevalence and course of malaria is illustrated by the author's experience with two wars. He recounts his early experiments with plasmochin in the control of malaria. Some descriptions are very vivid, such as his initial observation of living unstained parasites in motion. Much important factual information is presented in a very informal fashion. The manner in which the author presents his discovery of the value of Paris green in the control of larvae of malaria-bearing mosquitoes is commendably modest. Illustrations are few in number but well reproduced.

This book should be interesting bedside reading for any physician.

BULLETIN BOARD

(CONTINUED FROM PAGE 333)

Army and Navy Act Jointly to Relieve Medical and Dental Officer Shortage

The War and Navy Departments announced joint action taken to relieve a very serious shortage of medical and dental officers which now exists in the combined requirements of the Army, Navy and Veterans Administration.

Regardless of date of entry on active duty, only a two-year period of service will after July 1 be required of all Army Medical Corps Officers, including graduates of the Army Specialized Training Program except critically needed specialists. A two-year period of service will be required for all Navy graduates of the Navy Medical V-12 Training Program, who after March 1, 1946, were or will be ordered to active commissioned duty upon completion of internship. Navy doctors already separated will not be recalled. Under the Army's new two-year policy, it is estimated that approximately sixty days after July 1 will be required to complete the release of approximately 3,000 Army doctors affected by the change.

By the above action the requirements both of the Army and Navy can be met and in addition the Army can make available to the Veterans Administration approximately 1,000 badly needed medical officers and the Navy about 500.

Sixteen Medical Consultants Appointed to Assist in Naval Graduate Training Program

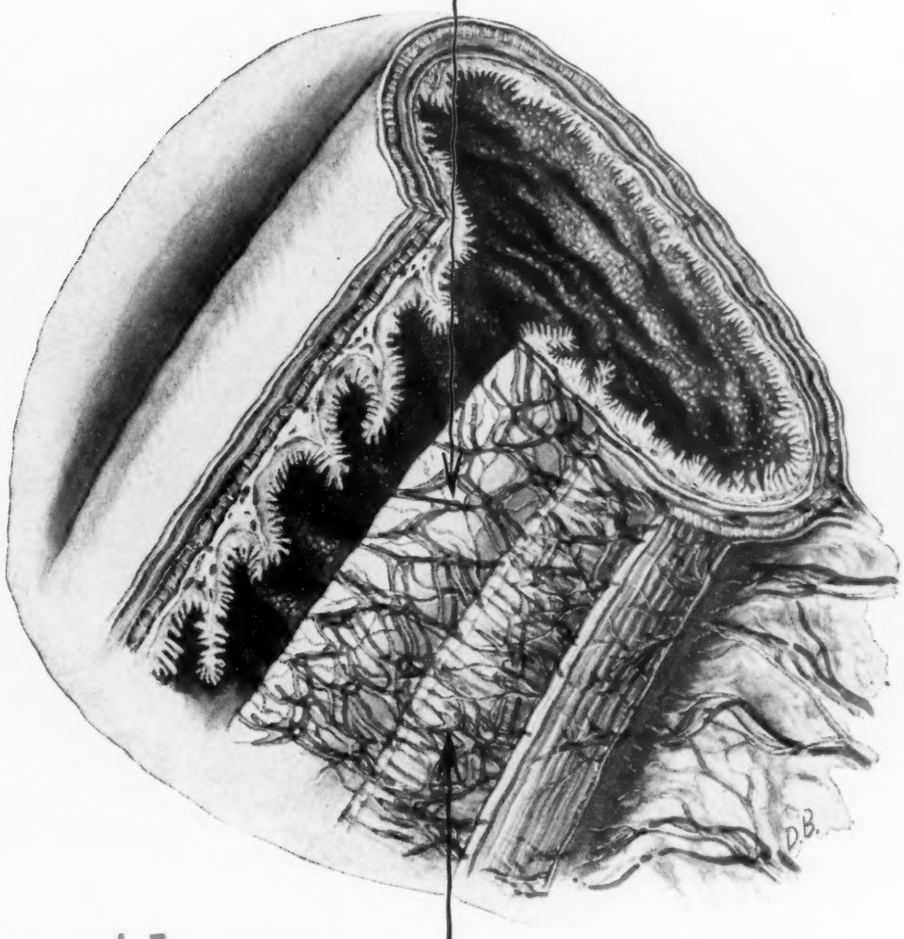
Vice Admiral Ross T. McIntire, Medical Corps, U.S.N., Surgeon General of the Navy, has announced the appointment of sixteen members of the Reserve Consultants Board to the Bureau of Medicine and Surgery.

The consultants are officers of the Naval Medical Reserve Corps with the exception of the consultant representing the Council on Medical Education and Hospitals of the American Medical Association. All are outstanding specialists in their respective fields. They will assist the Bureau of Medicine and Surgery in furthering the graduate medical training program.

The John and Mary R. Markle Foundation

Grants of over $486,000 for the study of tropical diseases, virus diseases, biochemistry, nutrition, physiology and other subjects in the field of medical and physical sciences, made by the John and Mary R. Markle Foundation during 1945 were announced in the final report of John A. Ferrell, medical director of the Foundation, who retired on July 1.

Effective July 1, John M. Russell, former assistant to President James B. Conant of Harvard University, became executive director of the John and Mary R. Markle Foundation. His appointment followed election to a vice-presidency of the Foundation in April of this year. For two years during the war Mr. Russell served in Australia on the staff of General Douglas MacArthur, and later was executive director of the Joint Army and Navy Committee on Welfare and Recreation, under the chairmanship of Arthur W. Page.



smoothage — *stimulates the plexus of Auerbach and Meissner by gentle distention of the bowel wall, initiating reflex peristalsis and movement of the fecal mass.*

metamucil — the highly refined mucilloid of a seed of the psyllium group, Plantago ovata (50%), combined with dextrose (50%) as a dispersing agent—provides smoothage for the physiologic management of constipation.

Metamucil is the registered trademark of G. D. Searle & Co., Chicago 80, Illinois.

searle — *RESEARCH IN THE SERVICE OF MEDICINE*

ACCEPTED AMERICAN MEDICAL ASSN

Doubting Thomas...

and Richard...

and William...

and James...

Yes, they are all "Doubting Thomases," these Abbott control technicians, when it comes to testing Abbott Intravenous Solutions. They insist upon rigid tests and searching examinations throughout *each step* of manufacture to insure utmost purity and sterility. Starting with the selection of raw materials in the stockroom, their exacting control on each lot is not relaxed until after it is packed and ready for shipment. In the interim, they make sterility and pyrogen tests, with special pharmacological and biological tests when needed; pH determinations; tests for dissolved chemical impurities; light-inspections of each finished container for color, clarity and freedom from foreign particles. If any of these tests should indicate that the lot is not up to standard, the entire lot would be destroyed. As a final precaution, each cap is vacuum-tested to insure an airtight fit. These tests and controls are your assurance that you can use Abbott Intravenous Solutions in bulk containers with fullest confidence. ABBOTT LABORATORIES, North Chicago, Illinois.

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FOR PHYSICIANS, SURGEONS, DENTISTS EXCLUSIVELY

ALL PREMIUMS COME FROM — PHYSICIANS SURGEONS DENTISTS — ALL CLAIMS GO TO

$5,000.00 accidental death $25.00 *weekly indemnity, accident and sickness*	**$8.00** *Quarterly*
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86¢ out of each $1.00 gross income used for members' benefit

$2,900,000.00 INVESTED ASSETS — **$13,500,000.00** PAID FOR CLAIMS

$200,000.00 deposited with State of Nebraska for protection of our members.

Disability need not be incurred in line of duty—benefits from the beginning day of disability

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44 years under the same management

400 FIRST NATIONAL BANK BUILDING, OMAHA 2, NEB.

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LANSTRONE CREAM

Each gram contains 2000 units Alpha Estradiol Hormone in a special cream base.

Alpha Estradiol content assayed on the basis of estrone.

To be dispensed on or by a prescription of a physician.

Indications: Pruritus vulvae, senile vaginitis, kraurosis, etc. Excellent reports from physicians who have used this form of medication.

Packed in 1 oz. and 1 lb. jars.

Samples available for clinical trial.

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Prevent INFECTION

with MERCUROCHROME

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(H. W. & D. brand of merbromin, dibromoxymercurifluorescein-sodium)

Extensive use of the Surgical Solution of Mercurochrome has demonstrated its value in preoperative skin disinfection. Among the many advantages of this solution are:

Solvents which permit the antiseptic to reach bacteria protected by fatty secretions or epithelial debris.

Clear definition of treated areas. Rapid drying.

Ease and economy of preparing stock solutions.

Solutions keep indefinitely.

The Surgical Solution may be prepared in the hospital or purchased ready to use.

Mercurochrome is also supplied in Aqueous Solution, Powder and Tablets.

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An Invitation to Beauty

We cordially invite you to discuss your beauty potential with the Cosmetic Consultant who distributes our products in your community. Beauty, we feel, is an intimate subject — one that is best discussed in the privacy of your home.

Too often, we are inclined to take ourselves for granted. It somehow escapes us that our outward appearance reflects our personality, our individuality, our ideas; that it is wonderfully adaptable to change, to improvement. We have a tendency to regard our physical aspects for all the world as though they were the drapes in the living-room which we intend to change one of these days, when we get around to it, for something more up-to-date and colorful. We put it off and put it off—and why?

Seeing ourselves as others see us helps immeasurably to arrive at that all-important detached viewpoint without which the art of self-improvement is greatly hampered. And it is here that the Cosmetic Consultants who distribute our products can be of real service to you; for, in effect, you see yourself through their eyes, aided by our Selection Questionnaire which, as it is answered, unfolds a word picture of your type and condition of skin and of your coloring, viewed cosmetically.

Since the outward appearance reflects the inner woman, every care should be taken to fulfill its beauty potential.

A card addressed to Luzier's, Inc., Kansas City 3, Missouri, will put you in touch with the Cosmetic Consultant in your community. It will be her pleasure to help you select beauty preparations suited to your individual requirements and preferences, and to suggest how they should be applied to achieve the loveliest cosmetic effect — your beauty potential.

Luzier's, Inc.

Makers of Fine Cosmetics and Perfumes

Kansas City, Missouri

Truly, this is America

the village church...the white picket fence...the broad highways which lead to great cities . . . above all, the homes which breed good citizens.

AMERICA'S strength is bred in her homes. In thousands of towns and cities, where modest bungalow stands proudly alongside a local showplace, where the well-kept lawn of one merges with its neighbor...here, the roots of good citizenship are deeply planted.

Here, too, strong bodies and good minds are built.

Because it is so American to want the finest, they will get it. In medicine, for instance, American hospitals, American practitioners are the envy of the world. In quiet towns or teeming cities, the skilled hands of healing go about their work of keeping America well.

To the science of Medicine the physician brings his own individual art of healing, for just as no two people are exactly alike, so no two cases of illness are identical.

Thus, the physician must be free and unhampered, so that he may combine the *science* of Medicine, which is for humanity, with the *art* of healing, which is for the individual patient.

At Ciba, in a quiet community of broad streets and pleasant lawns, we produce many of the fine pharmaceuticals used by the medical profession. In modern laboratories, Ciba medical scientists pursue their search for yet newer aids to physicians in their treatment of disease. This, too, is the American way.

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In Canada: Ciba Company Ltd., Montreal

Metrazol - *Powerful, Quick Acting Central Stimulant*

COUNCIL ACCEPTED

ORALLY - for respiratory and circulatory support
BY INJECTION - for resuscitation in the emergency

Metrazol, pentamethylentetrazol, Trade Mark Bilhuber.

INJECT 1 to 3 cc. Metrazol as a restorative in circulatory and respiratory failure, in barbiturate or morphine poisoning and in asphyxia. PRESCRIBE 1 or 2 Metrazol tablets for a stimulating-tonic effect to supplement symptomatic treatment of chronic cardiac disease and fatigue states.

AMPULES - 1 and 3 cc. (each cc. contains 1½ grains.)
TABLETS - 1½ grains.
ORAL SOLUTION - (10% aqueous solution.)

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Pediatrics:
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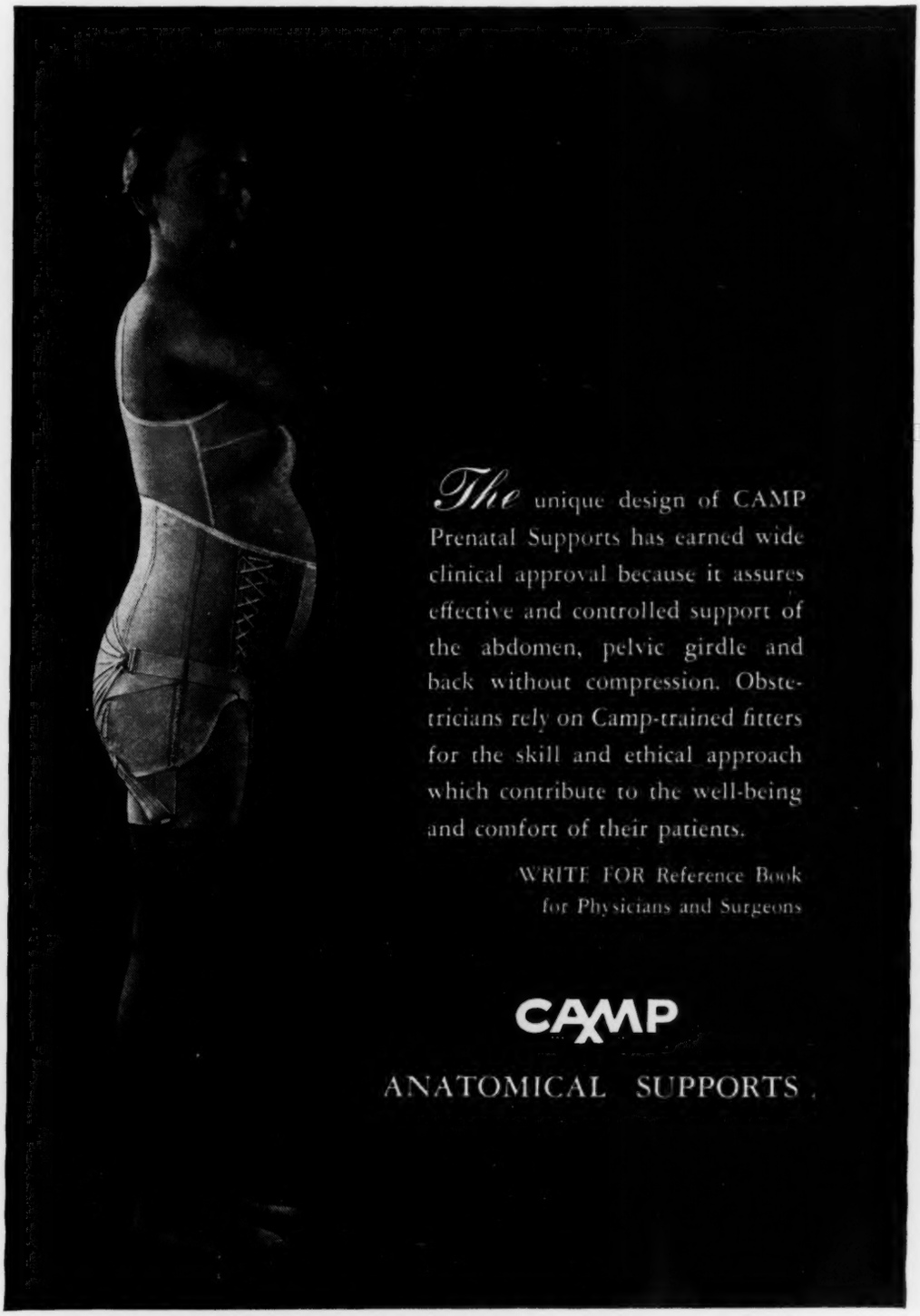
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The Common Denominator of Reducing Diets

Whether weight reduction is to be brought about gradually, at the rate of a pound or two per week, or drastically at the rate of a pound per day, all reducing diets must recognize one cardinal requirement: the need for protein of the right quality in the right amount.

Unless biologically adequate protein is supplied in the quantity normally required, the living tissue itself would suffer; tissue repair could not be carried on; hemoglobin regeneration would be impaired; antibody formation would be curtailed; resistance to infectious disease would be lessened, and production of enzymes and hormones would fall below the required level

Lean meat may well be called the common denominator of reducing diets. Its protein content is notably high, and the protein it supplies is of high biologic quality, adequate for every protein need.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods and Nutrition

AMERICAN MEAT INSTITUTE

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Cook County Graduate School of Medicine

(In affiliation with COOK COUNTY HOSPITAL)

Incorporated not for profit

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Four Weeks Course in General Surgery starting July 15, August 12, September 9.

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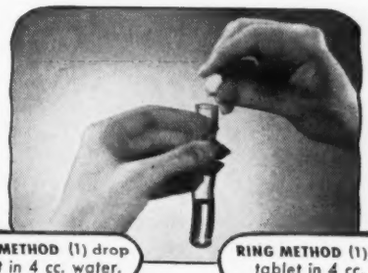


TURBIDITY METHOD (1) drop one tablet in 4 cc. water.

RING METHOD (1) drop one tablet in 4 cc. water.

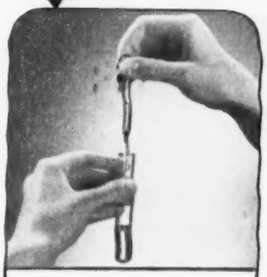
ALBUMINTEST

Simple, Convenient Tablet Test For Qualitative Detection of *Albumin.*

Nonpoisonous Noncorrosive

No Heating

Adapted to both **TURBIDITY and RING** methods of testing



(2) drop in 1 cc. urine.

(2) float in 1 cc. urine.

Quick, reliable, conveniently carried, Albumintest is designed for use by physicians, laboratory technicians and public health workers. Bulk solutions may be made up in any quantity.

Economical in bottles of 36 and 100

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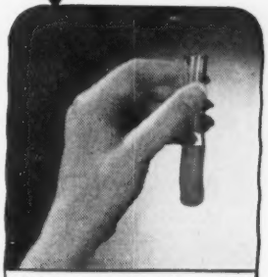

(3) degree of turbidity indicates presence of albumin.

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A companion to Clinitest—Tablet Method for Urine-Sugar Analysis

AMES COMPANY, Inc., Elkhart, Indiana

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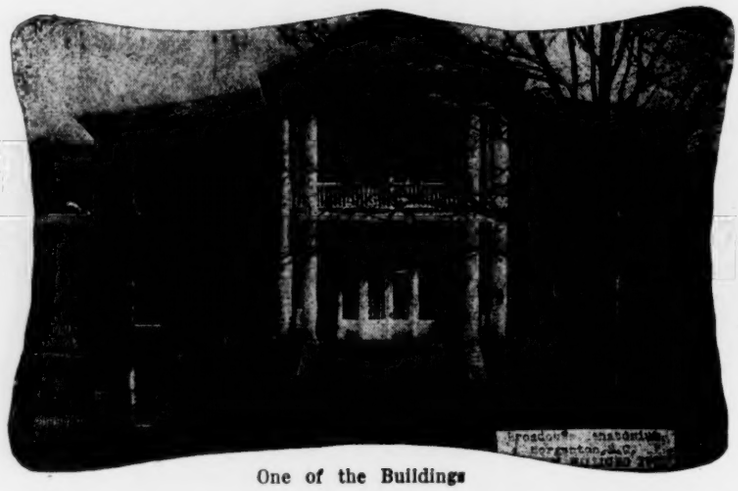

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Both of the medical officers reside at the SANATORIUM and both devote their entire time to its service. Located in Piedmont, North Carolina, the climate is mild and invigorating at all seasons.

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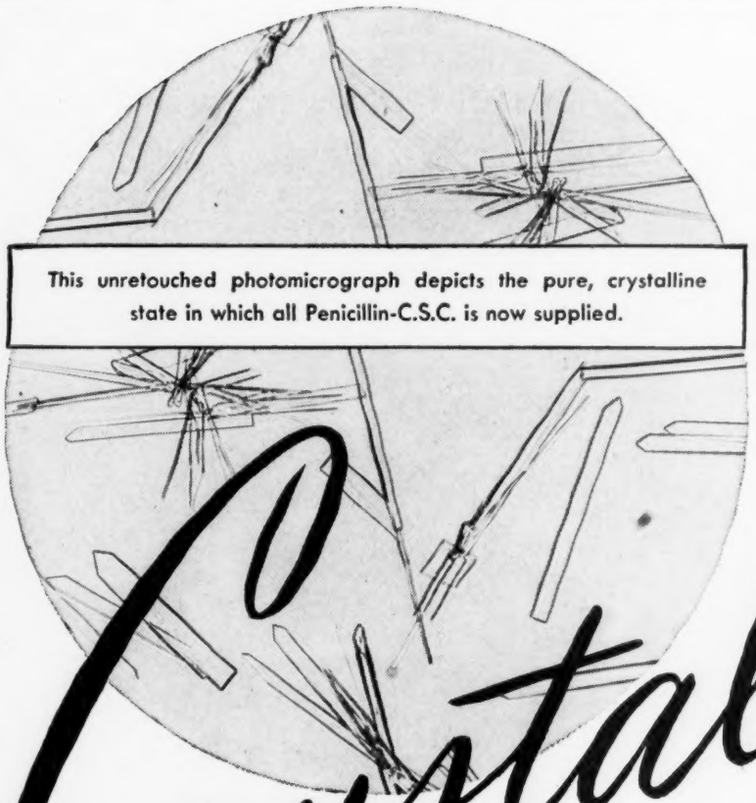

This unretouched photomicrograph depicts the pure, crystalline state in which all Penicillin-C.S.C. is now supplied.

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Crystalline PENICILLIN SODIUM-C.S.C.

As a result of special processes of purification and crystallization, all Penicillin-C.S.C. is now supplied in the form of the highly purified, heat-stable Crystalline Sodium Salt of Penicillin-C.S.C.

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In the crystalline state Penicillin Sodium-C.S.C. is so pure that it can be administered subcutaneously even in large doses with virtually no pain or danger of untoward reactions due to impurities.

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Crystalline Penicillin Sodium-C.S.C. is so heat-stable that it can be kept at room temperatures, virtually indefinitely without losing its potency.* It can now be carried in the physician's bag or stored on the pharmacy shelf. No longer need the physician wait until the patient can be hospitalized or until refrigerated penicillin can be obtained from the nearest depot.

*CAUTION: Once in solution, however, penicillin still requires refrigeration.

Optimal Therapeutic Activity

Because of its high potency per milligram, Crystalline Penicillin Sodium-C.S.C. exerts optimal therapeutic activity. A recent report shows the advantage of highly potent preparations.[1]

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The high state of purification achieved in Crystalline Penicillin Sodium-C.S.C. is indicated by *its high potency per milligram*. The number of units per milligram is stated on each vial, thus enabling the physician to know the degree of purification of the penicillin he is using.

[1] "The potency of the penicillin undoubtedly affected the results. The first 15 patients, all treated with the same batch of penicillin, were cured. The next 7 patients were treated with the same dosage of a different batch of penicillin. Five of these 7 were not cured. Assays of penicillin used for these 7 patients showed it to be of reduced potency." Trumper, M., and Thompson, G. J.: Prolonging the Effects of Penicillin by Chilling, J.A.M.A. *130*: 628 (March 9) 1946.

Crystalline Penicillin Sodium-C.S.C. is available in serum-type vials containing 100,000, 200,000, or 500,000 units.

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You trust
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Founded by
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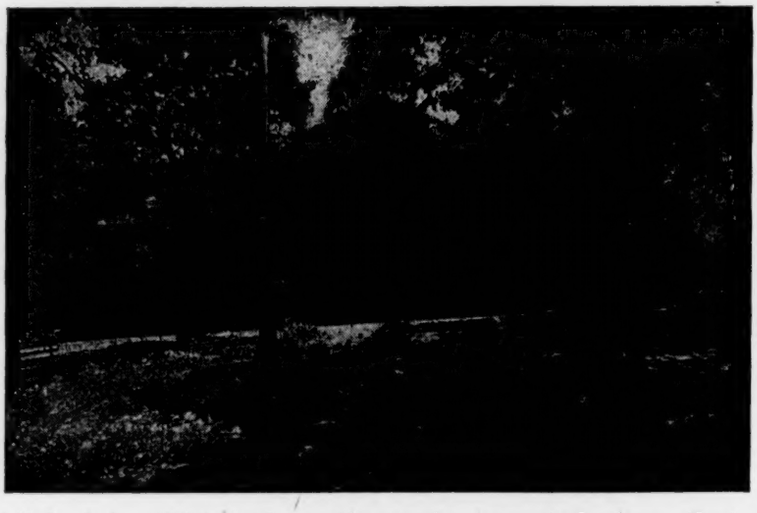

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Established in 1904 and continuously operated since that date for the medicinal treatment of drug and alcoholic addictions. Located in an attractive suburb of Greensboro where privacy and pleasant surroundings are to be found.

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Simplicity IN USE

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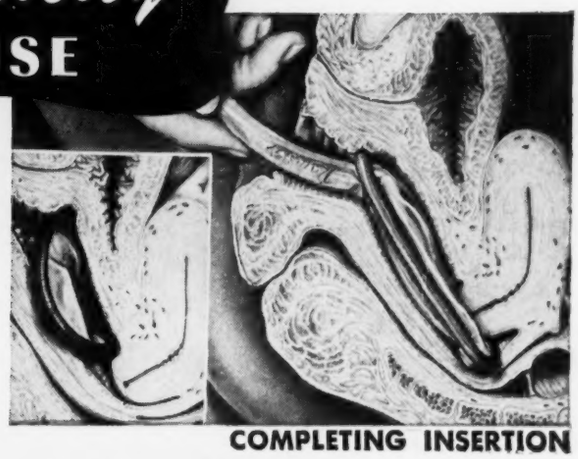

COMPLETING INSERTION

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These illustrations, showing the simplicity of use of "RAMSES" Gynecological Products, are reproduced from the booklet *Instructions for Patients*. For the physician's convenience, a supply of these booklets is available, upon request, for distribution to patients.

Determination of indications for control of conception, and advice on the proper method of providing protection, are the exclusive province of the physician. "RAMSES"* Gynecological Products are designed for use under the guidance of the physician only.

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Schieffelin BENZESTROL
(2, 4-di (p-hydroxyphenyl) -3-ethyl hexane)

- *Dosage to Meet the Patient's Needs*
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Possessing these desirable qualities, Schieffelin BENZESTROL meets the requirements of the most critical physician for the estrogenic control of the instabilities of the climacteric.

A non-stilbene compound, this synthetic estrogen tides the patient over the period of adjustment involved in hormonal regression with a high degree of safety and satisfaction.

Schieffelin BENZESTROL Tablets—0.5, 1.0, 2.0 and 5.0 mg. —50's—100's—1000's.
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1916-1946

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The continuance of his original conception of affording adequate medical care and personal attention, at moderate cost, to the mentally ill, has been our earnest endeavor throughout these years.

What measure of success we have attained is largely attributed to the confidence and loyalty of our many friends in the medical profession.

At this time, we wish to express our sincere appreciation for your support of our efforts and to assure you of our desire to be of continued service.

SAINT ALBANS SANATORIUM

RADFORD, VIRGINIA

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Even under the handicaps of travel or vacation accommodations, a mother can easily prepare a *safe* formula for her infant . . . by just adding cooled boiled water to Biolac according to the physician's directions. The simplicity of preparation (dilution only) minimizes possibilities of formula contamination even under adverse conditions.

In addition to safety and simplicity of preparation, Biolac formulas provide complete nutrition when supplemented with vitamin C. No chance omission of needed vitamins, carbohydrates or iron can occur. Biolac simply and safely affords nutritional elements for optimum health.

Easily calculated . . . quickly prepared. 1 fl. oz. Biolac to 1½ fl. oz. water per pound of body weight.

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Biolac

"BABY TALK" FOR A GOOD SQUARE MEAL

Biolac is a liquid modified milk, prepared from whole and skim milk, with added lactose, and fortified with vitamin B_1, concentrate of vitamins A and D from cod liver oil, and iron citrate. Evaporated, homogenized, and sterilized. Biolac is available in 13 fl. oz. cans at all drug stores.

ACCEPTED by AMERICAN MEDICAL ASSN. Council on Foods and Nutrition

ALL THE NUTRIENTS

Essential for a Food Supplement

Whenever the intake of essential nutrients must be augmented, as in convalescence from surgery or infectious disease, or in the correction of malnutrition, the delicious food drink which results from mixing Ovaltine with milk can be of significant value. This palatable food supplement provides a wealth of essential nutrients in a pleasant, easily assimilated form. It supplies protein of high biologic value, readily metabolized carbohydrate, easily emulsified fat, ascorbic acid, B complex and other vitamins, as well as essential minerals. Three glassfuls daily sharply augments the intake of these nutrients, as shown by the table of composition. Its low curd tension makes for rapid gastric emptying, hence appetite for the next meal is not interfered with. This delicious food drink is enjoyed both as a mealtime beverage and between meals.

THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILL.

Ovaltine

Three servings daily of Ovaltine, each made of
½ oz. of Ovaltine and 8 oz. of whole milk,* provide:

CALORIES	669	VITAMIN A	3000 I.U.
PROTEIN	32.1 Gm.	VITAMIN B_1	1.16 mg.
FAT	31.5 Gm.	RIBOFLAVIN	1.50 mg.
CARBOHYDRATE	64.8 Gm.	NIACIN	6.81 mg.
CALCIUM	1.12 Gm.	VITAMIN C	39.6 mg.
PHOSPHORUS	0.939 Gm.	VITAMIN D	417 I.U.
IRON	12.0 mg.	COPPER	0.50 mg.

*Based on average reported values for milk.

Dependable Nourishment

DURING THAT *all-important* FIRST YEAR OF LIFE

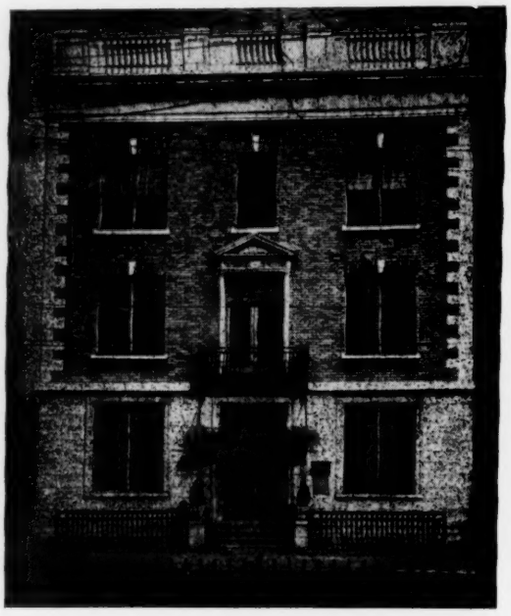
The well nourished baby is more resistant to the common ills of infancy. Moreover it is during that all-important first year of life that the very foundation of *future* health and ruggedness is laid. Similac-fed infants are notably well nourished; for Similac provides breast milk proportions of fat, protein, carbohydrate and minerals, in forms that are physically and metabolically suited to the infant's requirements. Similac dependably nourishes the bottle fed infant *—from birth until weaning.*

A powdered, modified milk product especially prepared for infant feeding, made from tuberculin tested cow's milk (casein modified) from which part of the butter fat is removed and to which has been added lactose, olive oil, cocoanut oil, corn oil and fish liver oil concentrate.

SIMILAC } SIMILAR TO HUMAN MILK

M&R DIETETIC LABORATORIES, INC. • COLUMBUS 16, OHIO

CHARLOTTE EYE, EAR & THROAT HOSPITAL



No. 106 West Seventh St.
CHARLOTTE, NORTH CAROLINA
Adjacent to Professional Building

—STAFF—

Oto-Laryngology
Dr. C. N. Peeler
Dr. F. E. Motley
Dr. V. K. Hart

Ophthalmology
Dr. H. L. Sloan
Dr. F. C. Smith

Perimetrist
Margaret Monroe Smith, Ph.D.

X-Ray and Laboratory
W. E. Roberts

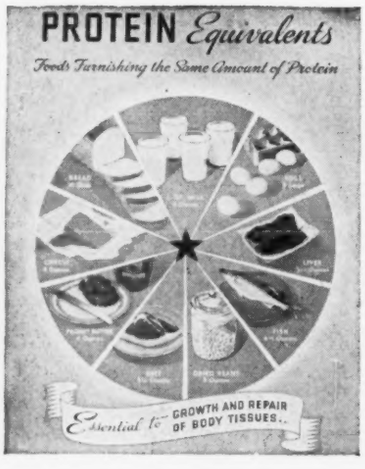
Superintendent
Miss Estelle Torrence

ROOMS—Single or *En Suite*

OFFICES OF THE STAFF ARE LOCATED IN THE HOSPITAL

A modern, fireproof, completely equipped Hospital for the diagnosis and treatment of diseases of the Eye, Ear, Nose and Throat. Diagnostic and Therapeutic Bronchoscopy and Esophagoscopy

Nursing staff consists of graduate nurses only



Free Upon Request

This colorful chart pictures quantities of foods furnishing the same amounts of protein. As sufficient quantities of animal protein are often lacking in the American diet, it is very important to add milk, a good source of protein—to maintain good muscular strength, build and replace worn out red blood cells.

THE DAIRY COUNCILS of

Winston-Salem & Lexington
624 Reynolds Building
Winston-Salem, N. C.

Durham, Burlington & Raleigh
310 Health Center Bldg.
Durham, N. C.

Greensboro & High Point
105 Piedmont Bldg.
Greensboro, N. C.

DOCTORS IN NON-DAIRY COUNCIL TERRITORY CAN OBTAIN THIS MATERIAL AT A NOMINAL COST FROM THE NATIONAL DAIRY COUNCIL, 111 NORTH CANAL STREET, CHICAGO 6, ILLINOIS

NO COAXING NEEDED . . .

TO EAT THIS FOOD!

Children and adults, too, just naturally love Sealtest Ice Cream. And how fortunate that it is such a nourishing food. In addition to Vitamin "A" and calcium, Sealtest Ice Cream is rich in other vitamins, minerals and protein found in milk, and contains 10 important Amino acids. Our Government includes ice cream in one of the Basic-7 food groups.

Southern Dairies

Sealtest ICE CREAM

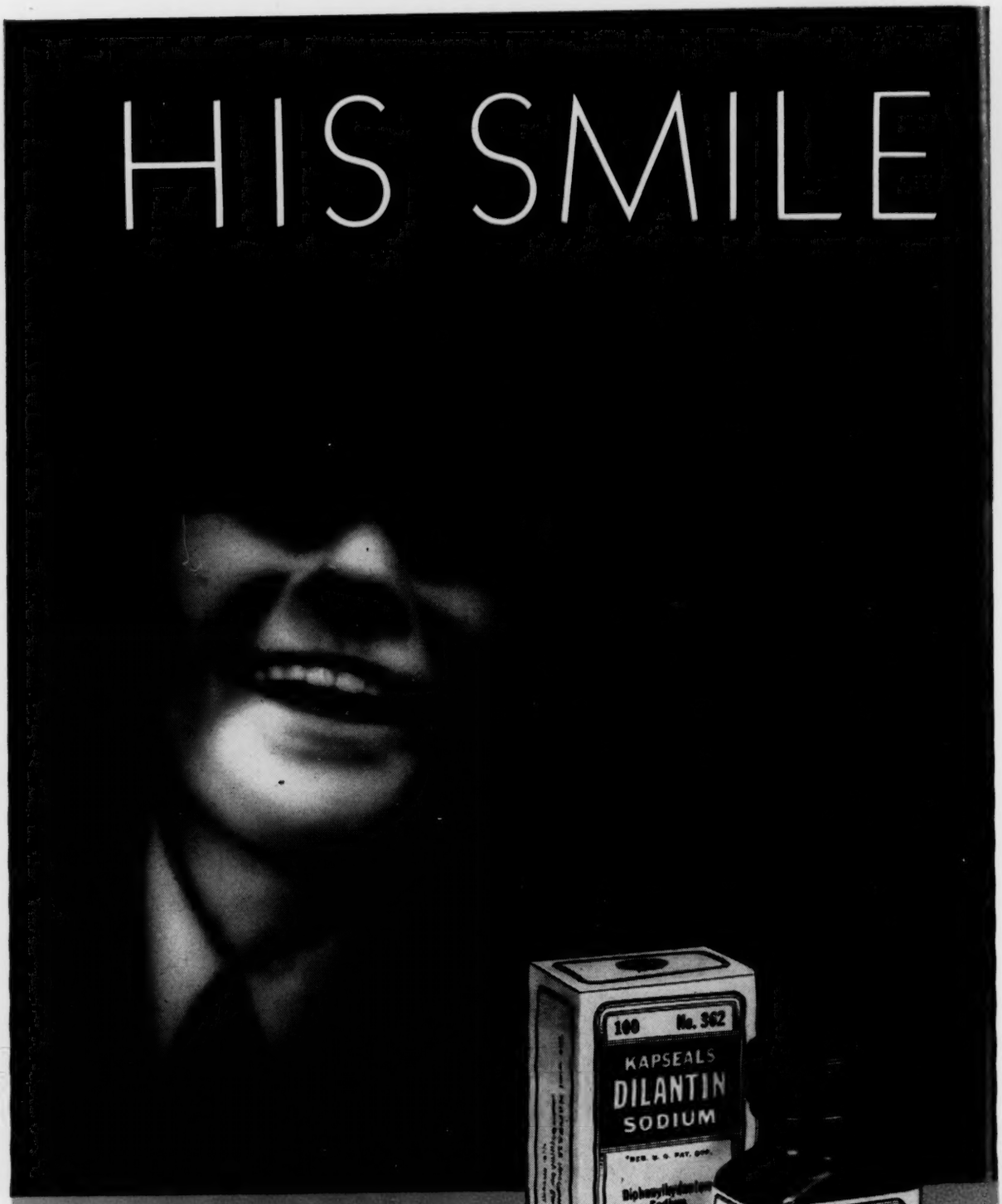
NATIONAL DAIRY PRODUCTS CORP. Sealtest

THE MEASURE OF QUALITY

Division of National Dairy Products Corporation

Tune in the Sealtest Village Store, starring Jack Haley, Thursday Evenings, NBC

HIS SMILE



PARKE, DAVIS & COMPANY

DETROIT 32 • MICHIGAN

BETRAYS
THE SHADOW ON HIS MIND

Behind the smile of the epileptic may be the feeling of insecurity and the dread of his next seizure. DILANTIN SODIUM favorably influences such epileptic psychologic factors and is effective in controlling convulsions. This superior anticonvulsant... relatively free from sedative, hypnotic or depressant action... provides complete control of seizures in a substantial percentage of cases. In others it lengthens the interval and diminishes effects of the seizures.

Available in Kapseals of 0.03 Gm. (½ gr.) and 0.1 Gm. (1½ gr.).

DILANTIN SODIUM

(DIPHENYLHYDANTOIN SODIUM)

1+1=1

To state it another way:

ONE	ONE	ONE
level tablespoonful of Pablum (or Pabena) when mixed with . . .	tablespoonful of milk, formula or water (hot or cold) makes . . .	rounded tablespoonful of cereal feeding of average consistency.

To make thicker feeding (as in pylorospasm, pyloric stenosis, etc.), increase the amount of Pablum or Pabena. To make thinner feeding, as in 3-months infants, increase amount of milk, formula or water.

NO COOKING . . . MIX UP ONLY AMOUNT TO BE FED . . . NO LEFTOVER CEREAL TO GO BACK INTO REFRIGERATOR . . . PABLUM IS ECONOMICAL . . . NO WASTE . . . QUICK AND EASY TO F[illegible] . . . SINCE 1932

Mead Johnson & Company, Evansville, Ind., U.S.A.

PABLUM (SINCE 1932) — PABENA (SINCE 1942)